CONTRIBUTIONS TOWARD A NEW FLORA OF THE PHILIPPINES: I. A SYNOPSIS OF THE GENUS *MYRSINE* (MYRSINACEAE)

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ABSTRACT

A synopsis of the genus *Myrsine* L. is provided for the Philippines, including all species heretofore assigned to the genus *Rapanea* Aublet. Fourteen species are recognized, of which four: *Myrsine densiflora, M. cruciata, M. aralioides,* and *M. penibukana*, are reported from the archipelago for the first time. *Myrsine aralioides, M. penibukana,* and *M. cruciata,* previously thought to be endemic to Mt. Kinabalu, Sabah, are reported for Surigao, Mindanao, Abra and Rizal provinces, Luzon, and northern Palawan, respectively. A key to the species, descriptions, representative photographs and comments on the distribution, ecology and conservation status for each species are provided. Because *Rapanea* is here considered a taxonomic synonym of *Myrsine*, all Philippine species heretofore assigned to *Rapanea* are transferred to *Myrsine*, and new names are proposed for those species whose epithets in *Rapanea* are preoccupied under *Myrsine*. The following new combinations are made: *Myrsine apoensis* (Elmer) Pipoly, *M. oblongibacca* (Merrill) Pipoly, *M. cruciata* (Philipson) Pipoly, *M. penibukana* (Philipson) Pipoly, *M. mindanaensis* (Elmer) Pipoly, *M. fastigiata* (Elmer) Pipoly, *M. aralioides* (Philipson) Pipoly, *M. glandulosa* (Elmer) Pipoly, and *Myrsine peregrina* (Mez) Pipoly. Comparative studies of taxa in nearby Sabah, Brunei, Sarawak and Borneo result in the new combination *Myrsine multibracteata* (Merrill) Pipoly. In addition, two new names are made: *Myrsine medeciloae* Pipoly and *M. amorosoana* Pipoly. Ten binomials are lectotypified and *Rapanea venosa* Elmer *non* (A. DC.) Mez is placed in synonymy under *Myrsine peregrina* (Mez) Pipoly.

RESUMEN

Se ofrece una sinopsis del género *Myrsine* L. para las Filipinas, incluyendo todos los taxa previamente asignados al género *Rapanea* Aublet. Se reconocen catorce especies, de las cuales cuatro, *Myrsine densiflora, M. cruciata, M. aralioides,* y *M. penibukana*, son nuevas citas para el país. *Myrsine aralioides, M. penibukana* y *M. cruciata,* anteriormente fueron consideradas como especies endémicas del Mt. Kinabalu, de Sabah, sin embargo, el presente estudio revela que estas especies se encuentran en las provincias de Abra y Rizal en la isla de Luzón, y en la parte septentrional de la isla de Palawan. Se ofrece una clave de las especies, descripciones, fotos representativas y comentarios sobre la distribución, ecología y estatus de conservación para cada especie. Debido al hecho de que se considera el género *Rapanea* como un sinónimo taxonómico del género *Myrsine*, todas las especies previamente asignadas al género *Rapanea* se transfieren al género *Myrsine*. Para las especies con epítetos previamente ocupados en *Myrsine*, se forman epítetos nuevos. Se proponen las siguientes nuevas combinaciones: *Myrsine apoensis* (Elmer) Pipoly, *M. oblongibacca* (Merrill) Pipoly, *M. cruciata* (Philipson) Pipoly, *M. penibukana* (Philipson) Pipoly, *M. mindanaensis* (Elmer) Pipoly, *M.*

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fastigiata (Elmer) Pipoly, *M. aralioides* (Philipson) Pipoly, *M. glandulosa* (Elmer) Pipoly y *Myrsine peregrina* (Mez) Pipoly. Estudios comparativos del las especies de Sabah, Brunei Sarawak y Borneo dan como resultado la nueva combinación *Myrsine multibracteata* (Merrill) Pipoly. También, se proponen dos nombres nuevos: *Myrsine medeciloae* Pipoly y *Myrsine amorosoana* Pipoly. Se lectotipifican diez binómenes y se relega *Rapanea venosa* Elmer *non* (A. DC.) Mez, a la sinonimia de *Myrsine peregrina* (Mez) Pipoly.

INTRODUCTION

As part of the Flora of the Philippines Project, jointly undertaken by BRIT and the Philippine National Herbarium, a revision of the Philippine species of *Myrsine*, including those taxa formerly assigned to *Rapanea*, was undertaken. The genus is now defined as pantropical, with approximately 300 species, of which nearly 1/4 remain undescribed. *Myrsine* is the type genus of the tribe *Myrsineae*, defined by its uniseriate ovules and imbricate or valvate perianth aestivation. Recent studies (Pipoly 1992b, 1994) have shown that the principal technical characters defining the tribe are found rather at random in the tribe *Ardisieae,* and biseriate ovules are most common in the genus *Parathesis* Hooker f., and *Stylogyne* A. DC. Therefore, a worldwide generic monograph is needed before long-term nomenclatural stability is established. Pipoly (1991a, 1992a, 1992b) and Pipoly and Chen (1995) have shown that characters traditionally used to separate *Rapanea* from *Myrsine* grade and therefore cannot be used with confidence to define either group unequivocally, and have begun the process of transferring all species of *Rapanea* into *Myrsine*.

NOMENCLATURAL HISTORY AND SYSTEMATIC POSITION OF *MYRSINE*

The genus *Myrsine* Linnaeus, as here defined, includes *Rapanea* Aublet and *Suttonia* A. Richard, among other genera rarely recognized today (see Taxonomic Treatment). While no modern author has considered maintaining *Suttonia* (except Rock 1974), the discussion of the systematic position of species heretofore assigned to *Rapanea* has varied considerably from one author and world region to another.

The first monographer of the family, Alphonse de Candolle, proposed uniting *Rapanea* with *Myrsine* in his generic level reviews of the family (1834a, 1834b), which he consistently followed in later "memoirs," or analyses of the generic and tribal taxonomy of the family (1841a, 1841b), as well as in his contribution to the DC Prodromus (1844). Koorders and Valenton (1900) followed the De Candolle philosophy in their treatment of the family for Java. Mez (1901, 1902) separated *Myrsine* from *Rapanea* based on the obvious style on the pistil and pistillode with obvious filaments of the stamens and staminodes in the former, and an apparently

obsolete style with sessile anthers or antherodes (sterile anthers or ones that produce non-viable pollen) in the latter. Subsequently, in the most comprehensive revision of the family covering Asian species since Mez, Walker (1940) maintained *Rapanea* as a genus distinct from *Myrsine,* by essentially paraphrasing Mez, a view concurring with Standley (1938) and Degener (1939). Oliver (1951) followed Degener as did Bâthie (1953). However, Walker's treatment of the group for Taiwan (1959) concluded that the two genera were in fact, synonymous, following the argument proposed by Hosaka (1940). Later, Li (1963, 1978) Meyer and Walker (1965), Wilbur (1965) and Backer and Bakhuizen van de Brink (1965) also followed Hosaka. Lundell (1966, 1971) in his treatments of the family for Guatemala and Panama, followed Mez's arguments, but did not provide specific details to refute the transfers made by Stearn (1969) who was the first modern author treating tropical American taxa to synonymize *Rapanea* within *Myrsine.* Liogier (1971, 1989) who had earlier recognized *Rapanea* in his treatment of the Myrsinaceae for the Flora de Cuba (1959), also followed Stearn. Indeed, Lundell (1981) recognized *Rapanea* as synonymous with *Myrsine*, "to follow current practice, not out of any conviction as to the justification for this disposition of the taxa !" Subsequently, Lundell (1984) described two new neotropical species in *Myrsine.*

The most cogent argument presented in the recent literature for maintaining *Rapanea* as distinct from *Myrsine* is that of A. C. Smith (1973, 1981), who based his decision on the fact that the *Rapanea* species he was familiar with did not have the "flange," or apically free staminal tube, present in *Myrsine africana* L., the type species of *Myrsine*, but rather, the staminal tube was developmentally fused with the corolla tube such that the anthers appeared epipetalous. Smith's philosophy was largely that of Degener (1939) and Oliver (1951) but neither of those authors had so eloquently stated their rationale. Sleumer (1986) followed A. C. Smith's concept in his treatment of the taxa for New Guinea, as did Fournet (1978) for Guadeloupe and Martinique, Taton (1980) for Central Africa, Kupicha (1983) for the Zambesiaca Region, Halliday (1984) for Tropical East Africa, Little et al. (1988) for Puerto Rico and the Virgin Islands, and Green (1986, 1990) for the Norfolk and Lord Howe Islands' taxa.

On the other hand, Fosberg and Sachet (1975, 1980), and Sachet (1975) discussed their philosophy for including *Rapanea* within *Myrsine,* largely because they considered the staminal tube difference the only character separating the two groups. They proposed that the *Rapanea* group *sensu stricto* be recognized as a section within *Myrsine*, but did not formalize that position nomenclaturally. Correll and Correll (1982), Liogier (1989), Howard (1989), Nicholson (1991), and Guzmán-Teare (1992) all followed

Stearn (1969) and the Fosberg and Sachet papers. Wagner et al. (1990) presented essentially the same argument as Fosberg and Sachet (1975), but allowed for the possibility that future, geographically broad studies, might reveal that a small staminal tube difference may in fact, be important.

Based on the study of at least representative taxa for the genus worldwide, Pipoly (1991a, 1992a, 1992b), Pipoly and Chen (1995), Harvey and Pipoly (1995), and Chen and Pipoly (in press), along with my unpublished work, have shown that the species previously placed in *Rapanea*, including the type species, *R. guyanensis* Aublet, have two vascular traces in the lower corolla tube, such that the removal of an anther from the corolla results in the tearing of the adaxial surface of the corolla tube without detaching the corolla lobe. As Pipoly (1981, 1983a, 1983b, 1987, 1988, 1991b, 1991c, 1992c, 1992d, 1993, 1994) has demonstrated in the neotropical genus *Cybianthus*, a transitional series from a staminal tube free from the corolla tube to one where the staminal tube is morphogenetically fused in its entirety is easily seen within one myrsinaceous genus. In addition, new Venezuelan, Colombian, and Peruvian species of *Myrsine* recently described by Pipoly (1991a, 1992a, 1992b) clearly show that some taxa possess filaments totally free from each other and also from the corolla tube, others have filaments briefly connate basally, but free from the adaxial corolla tube (thus, a "flange"), others again have filaments partially connate but wholly adnate to the adaxial corolla tube and lobe surfaces, and finally, still others have lower portions of the filaments forming a tube morphogenetically fused to the corolla tube, as well as having the upper portions of the same filaments morphogenetically fused to the corolla lobes. Clearly, these variable morphotypic gradations, perhaps subject to the influences of sex expression, and a range of hormonal activity at times associated with reiteration phenomena, cannot be adequately used to characterize the taxa at a supraspecific level. Likewise, stigmatic and stylar characters have also been shown to vary in similar fashion, (Pipoly 1991a, 1992b) with one notable exception. To date, no ligulate stigmas have been found in neotropical taxa, although some taxa have been described with short styles (Pipoly 1992b). Therefore, I see no reason to recognize *Rapanea* as a distinct entity from *Myrsine*, even though some nomenclatural adjustments will have to be made to accomplish its total synonymy. In phylogenetic terms as well, it is more parsimonious to assume that the small, umbellate or fasciculate inflorescence structure, concomitant with the acropetally accumulating floral bracts along the perennating peduncle forming the "short shoot," would have arisen only once. However, owing to the sheer size of the group and dearth of knowledge about its taxa in many of its most species-rich geographic areas, a full phylogenetic analysis must await the accumulation of further data from the taxa on a comprehensive, worldwide scale.

NOTES ON MORPHOLGICAL TERMINOLOGY AND SPECIMEN CITATION

Morphological terminology follows Pipoly (1987, 1991a, 1992b, 1992c) and Chen and Pipoly (in press). Specimens are cited according to island, north to south (e.g., Luzon, Mindoro, Panay, Palawan, Mindanao), then alphabetically by province within each island. Traditional divisions into regions, such as that used by Merrill (1923) is problematic, and is not used here, because some islands have since been reassigned from one region to another. When known, the collector, his personal collection number, followed by the herbarium number, is cited. In some cases, such as that of the Ramos and Edaño collections, specimens deposited at A, BISH, GH, K, L, NY, PNH, or US may have only the collector's personal number, only the BS (Philippine Bureau of Science), the FB (Forestry Bureau) or the PNH (Philippine National Herbarium) number, or may have the personal and one of the institutional numbers. The institutional numbering has resulted in much confusion for the curator desiring to update determinations. In order to remedy this, I include both number types whenever I have been able to match them.

TAXONOMIC TREATMENT

Myrsine L., Sp. Pl. 1:196. 1753, Gen. Pl. ed 5:90. 1754; R. Brown, Prodr. 1:533. 1810; Roemer & Schultes, Syst. Veg. 503. 1819; Sprengel, Syst. Veg. 1:664. 1825. A. DC., Trans. Linn. Soc., London, Bot. 17:104. 1834, Ann. Sci. Nat., Ser. 2, 9:292. 1834, Ann. Sc. Nat., Ser. 2, 16:65–97, 129–196, t. 1–3, 8–9, 1841; A. DC in DC, Prodr. 8:92. 1844; Miquel in Martius, Fl. Bras. 10:306. 1856, Fl. Ned. Ind. 2:1014. 1856. Scheffer, Myrs. Arch. Ind. 46. 1867. Hooker in Bentham & Hooker, Gen Pl. 2:642. 1876. Clarke in Hook. f. Fl. Brit. India 3:511. 1882., Pax in Engler & Prantl, Pflanzenfam. IV. 1:92. 1889; Koorders & Valeton, Bijdr. Boomsoort. Java 5:228. 1900; Mez in Engler, Pflanzenr. 9(IV. 236):338. 1902; Walker, Philipp. J. Sci. 73:1940, Bot. Mag. Tokyo 67:249. 1954, Bull. Agri. Home Ec. Univ. Ryuku 2:76. 1955, Quart. J. Taiwan Mus. 12:164. 1959; F. Meyer & E. Walker, Fl. Japan 713. 1965; Stearn, Bull. Brit. Mus. (Nat. Hist.), Bot. 4:174. 1969; Fosberg & Sachet, Smithsonian Contr. Bot. 21:3–11. 1975; H-L. Li, Fl. Taiwan 48. 1978; Lundell, Phytologia 48:137. 1981, Phytologia 56:418. 1984; Halliday, Fl. Tr. E. Afr. Myrs. 6. 1984; A. Nicholson in D. Nicholson, Fl. Domin. 2:160. 1991; Pipoly, Novon 1:204. 1991, Caldasia 17:1. 1992, Novon 2:392. 1992; Guzmán-Teare, Cat. Fl. Pl. & Gymno. Peru 732. 1993; Pipoly & Chen, Novon 5:360. 1995; Harvey & Pipoly, Fl. Pico das Almas 487. 1995; Chen & Pipoly, Fl. China 15:34–38. (In press). TYPE SPECIES (by monotypy): *Myrsine africana* L.

Rapanea Aublet, Hist. Pl Guiane I:121. t. 46. 1775; A. Jussieau. Gen. Pl. 288. 1789. Miquel in Martius, Fl. Bras. 10:306. 1856; Mez in Urban, Symb. Antill. 2:427. 1901; Mez in Engler, Pflanzenr. 9(IV. 236):342. 1902; Pitard, in LeComte, Fl. Gen. Indoch. 3(6):786. 1930; Standley, Publ. Field Mus. Nat. Hist., Bot. Ser 18(2):898. 1938; Bâthie, Fl. Madagascar 161:138. 1953; Lundell, Fieldiana, Bot. 24(8–1):190. 1966, Fl. Panama 8:286. 1971; Fournet, Fl. Ilus. Phan. Guadeloupe et Martinique 1046. 1978; Taton, Fl. Afr. Cent. Myrs. 53. 1980; Kupicha, Fl. Zambesiaca 7:201.

1983; Halliday, Fl. Trop. E. Afr. Myrs. 2, 8. 1984; Little et al., Arbol. Puerto Rico y Islas Virg. 2:872. 1988.

Samara Swartz, Prodr. 1:261. 1788, *non* Linnaeus, Mant. 144, 199. 1771.

Manglilla A. Jussieau, Gen. Pl. 151. 1789.

Athruphyllum Loureiro, Fl. Cochinch. 1:148. 1790.

Caballeria Ruíz et Pavón, Fl. Peruv. Prodr. 141. t. 30, 1794.

Suttonia A. Richard, in Dumont d'Urville, Déc. Astrolabe Bot. 1:349. 1832, *et* Ess. Fl. Nouv.-Zel. 349. pl. 38. 1832; Léveillé, Repert. Spec. Nov. Regni Veg. 10:443. 1912; Rock, Indig. Tree Hawaiian Is. 367–380. 1974.

Shrubs or small trees. Leaves alternate, exstipulate. Inflorescences lateral (axillary), umbellate or fasciculate, sessile or on short, perennating peduncles girdled by persistent floral bracts (thus forming "short shoots"). Flowers 4–5(–6)-merous, bisexual or unisexual (plants then monoecious, dioecious, or polygamous); sepals nearly free or united to 1/2 length, imbricate or valvate, usually ciliate, punctate, persistent; petals nearly free or rarely united to 1/2 their length, usually ciliate, glandular-granulose at least along margin and often throughout within, punctate; stamens and staminodes similar, subequalling corolla length, the filaments free or connate basally to form a tube, the tube with or without sterile appendages alternating with the filaments, and all merely adnate to the corolla tube; or developmentally fused throughout, the anthers thus appearing epipetalous, the anthers ovate or reniform, rarely sagittate, 2-celled, dehiscing by longitudinal slits, rarely by subterminal pores opening later into wide longitudinal slits. Pistil and pistillode similar; obconic, obturbinate, obnapiform, or variously subglobose; ovary globose, costate or not, glabrous or glabrescent; ovules few, uniseriate, or rarely biseriate, completely immersed in placenta or seated below apical pores in placenta or variously projecting; style obsolete to present, tapering into stigma; stigma morchelliform, liguliform, sinuate to lobate, prismatic and 3-lobed, or rarely, conical. Fruit a globose, subglobose, ellipsoid, ovoid, or subovoid drupe, with somewhat fleshy exocarp and crusty or leathery endocarp, 1-seeded. Seed occupying cavity; endosperm horny, ruminate; embryo cylindric, transverse.

Myrsine, as here defined, contains ca. 300 species, of which nearly 1/4 remain undescribed, distributed pantropically. They occupy habitats from mangroves to subalpine scrub, but always in moist, wet or pluvial habitats. In the Philippines, 14 species are known, separable by the following key.

KEY TO *MYRSINE* OF THE PHILIPPINES

1. Flowers borne in sessile to subsessile umbels, the peduncle apparently not perennating, obsolete to 3.5 mm long.
   2. Leaf blades 1.5–1.8(–1.9) cm wide.
      3. Young branchlets and petioles rufous-puberulent or glandular-papillose; leaf blades dull to subnitid above, the midrib impressed above, prominently raised below, the punctations pellucid, inconspicuous.

4. Leaf blades linear to narrowly oblanceolate; petioles marginate, not canaliculate; pedicels obconic, (1.5–)2–2.5(–3) mm long; young branchlets and petioles rufous puberulent and glandular-granulose. ..... 1. **M. medeciloae**
4. Leaf blades elliptic to lanceolate; petioles deeply canaliculate, not marginate; pedicels cylindric, 5–7 mm long; young branchlets and petioles rufous glandular-papillose, not puberulent or glandular-granulose. ..... 2. **M. apoensis**

3. Young branchlets and petioles glabrous; leaf blades nitid to laccate above, the midrib prominently raised above and below, the punctations numerous, prominently raised.
5. Leaf blades symmetric, oblong or elliptic, the apex obtuse to rounded, prominently retuse to emarginate at tip, the margins revolute; fruit globose. ..... 3. **M. amorosoana**
5. Leaf blades asymmetric, narrowly oblong to narrowly oblanceolate, the acuminate but bluntly rounded at tip, the margins flat; fruit oblongoid. ..... 4. **M. oblongibacca**

2. Leaf blades > (1.8–)2 cm wide.
6. Branchlets angulate; fruit depressed-globose, subglobose, or ovoid.
7. Leaf blade cartilaginous, laccate above, smooth above and below, the apex rounded to obtuse, the tip retuse to emarginate; pedicels straight, not reflexed in anthesis; fruit 5–6 mm diam. ..... 5. **M. cruciata**
7. Leaf blade coriaceous, dull or somewhat nitid above, sparsely to densely scrobiculate above and below, the apex short-acuminate to acutish or obtuse, not emarginate or retuse at tip; pedicels reflexed in anthesis; fruit 2.2–5 mm diam.
8. Leaf blade symmetric, apically acutish to obtuse; pedicels cylindric, 1.5–2.5 mm long. ..... 6. **M. densiflora**
8. Leaf blade asymmetric, apically short-acuminate; pedicels obconic, 3–5 mm long. ..... 7. **M. peregrina**

6. Branchlets terete; fruit globose.
9. Leaf blade chartaceous, inconspicuously punctate above, the base acute to cuneate, decurrent to base of petiole; petiole 6–8 mm long; branchlets minutely rufous papillose and early glabrescent, or glabrous at first.
10. Leaf blade scrobiculate above; branchlet apex minutely rufous papillose at first; calyx 0.8–1 mm long; plants of submontane forests. ..... 8. **M. mindanaensis**
10. Leaf blade smooth above; branchlet apex glabrous; calyx 1.0 1.5 mm long; plants of mangrove swamps. ..... 9. **M. philippinensis**
9. Leaf blade coriaceous, prominently pellucid punctate above, the base obtuse to rounded, not decurrent on petiole to base; petiole 10–15 mm long; branchlets densely rufous tomentose at first. ..... 10. **M. avenis**

1. Flowers borne in fascicles or umbels, on perennating peduncle-like short shoots usually greater than 3.5 mm long at maturity.
11. Flowers in fascicles; pedicels obsolete to 2.5 mm long; leaf blades sparsely and conspicuously, but not prominently punctate above.
12. Floral bract margins erose-fimbriate, long white glandular-ciliolate; peduncles (3.5–)4–12.5 mm long; corolla lobes densely and prominently red-punctate along entire margin, densely and prominently

pellucid punctate-lineate medially; anther connective red punctate lineate; leaf margin flat. ..... 11. **M. penibukana**

12. Floral bract margins entire, rufous glandular-ciliolate; peduncles 3.5–4 mm long; corolla lobes densely and prominently black punctate medially, epunctate marginally; anther connective punctate; leaf margin revolute. ..... 12. **M. fastigiata**

11. Flowers in umbels; pedicels 2.6–6 mm long; leaf blades densely and conspicuously or prominently punctate above.

13. Branchlets 7–10 mm diam., drying sulcate; leaf blades thickly coriaceous to cartilaginous; densely but not prominently pellucid or red punctate; leaf buds covered by minute translucent or rubiginous glandular scales; petioles marginate and canaliculate, 5–10 mm long; without raised midrib; peduncle stout, (3–)3.5–4 mm diam.; pedicels 2.6–4 mm long; sepals deltate, 1.5–2 mm long. .... 13. **M. aralioides**

13. Branchlets 3–3.5 mm diam., longitudinally ridged, but not sulcate; leaf blades coriaceous, densely and prominently pellucid punctate above and below; leaf buds densely appressed rufous glandular-stellate and -dendroid tomentose; petioles short-marginate, 3–5 mm long, not canaliculate, the midrib raised to petiole base; peduncle thin, 1–2 mm diam.; pedicels 4–6 mm long; sepals widely ovate, 0.6–0.9 mm long. ..... 14. **M. glandulosa**

1. **Myrsine medeciloae** Pipoly, nom. nov. **(Fig. 1A, B).** *Rapanea angustifolia* Merrill, Philipp. J. Sci. 20:429. 1922, *non Myrsine angustifolia* (A. DC.) D. Dietr., Synops. 1:619. 1839 [=*Embelia angustifolia* A. DC.], *nec Myrsine angustifolia* E. Meyer ex Schimper, Traité Pal. Végét. 2:922. 1872 (nom. nud.), *nec Myrsine angustifolia* Heller, Minn. Bot. Stud. Bull. 9:873. 1897, *nec Myrsine angustifolia* (Mez) Hosaka, Occ. Pap. Bish. Mus. 16:42. 1940= [*Suttonia angustifolia* Mez, Pflanzenr. 9 (IV. 236):337. 1902.] TYPE: PHILIPPINES. LUZON ISLAND. Ilocos Norte Prov.: Mt. Nagappatan, Aug 1918 (fr), *M. Ramos BS 33243* (HOLOTYPE: PNH-destroyed; LECTOTYPE, here designated: A!).

Shrub or small tree, height unknown. *Branchlets:* essentially terete, 1.5–2 mm diam., densely rufous-puberulent and glandular-granulose apically, glabrescent. *Leaves:* buds densely rufous-puberulent and glandular-granulose, rufous glandular-ciliate along margins; blades chartaceous, symmetric, linear to narrowly linear-oblanceolate, (2.5–)5–6.5 cm long, 0.6–1.0(–1.5) cm wide, obtuse apically, retuse at apex tip, acute basally, decurrent to petiole base, smooth and nitid above, pallid below, densely and prominently black punctate below toward apex, the midrib impressed above, prominently raised below, secondary veins 12–15, slightly prominulous above and below, the marginal collecting vein ca. 0.5 mm from margin, entire and revolute; petioles marginate, not canaliculate, 4–9 mm long, rufous puberulent at first, glabrescent. *Staminate inflorescence:* sessile, 6–12-flowered; floral bracts coriaceous, lanceolate, 1 mm long, 0.3 mm wide, apically acute, densely and prominently black punctate medially, the margin entire, densely glandular-ciliolate; pedicels cylindric, 1.5–3 mm long. *Staminate flowers:* 4-merous, chartaceous, 2.5–3 mm long; calyx cotyliform,0.7–0.9 mm long,

FIG. 1. A-B. *Myrsine medeciloae* Pipoly. A. pistillate branch, note sessile umbels (lectotype). B. Staminate branch (*R. Meyer BS 3114*). C. *Myrsine oblongibacca* (Merrill) Pipoly, showing oblongoid fruit (lectotype). D. *Myrsine apoensis* (Elmer) Pipoly, pistillate branch, showing few-flowered inflorescences and elliptic leaves (lectotype). E-G. *Myrsine amorosoana* Pipoly. E. Pistillate branch, showing revolute leaf margins and globose fruits (*G. Edaño 76198*). F. Staminate branch, showing retuse leaf apices (*G. Argent & E. Reynoso 89112*). G. Pistillate branch, showing fewer-fruited inflorescences and much larger leaves (*G. Edaño BS 76198*). H-I. *Myrsine cruciata* (Philipson) Pipoly. H. Staminate branch (*J. & M. Clemens 30258*). I. Pistillate branch, showing ovoid fruits (*C. Ridsdale SMHI 225*). Black scale bar equals 1 cm, smallest unit on white scales equals 1 mm.

the tube 0.1–0.2 mm long, the lobes deltate to ovate, 0.5–0.8 mm long, 0.5–0.7 mm wide, acute apically, prominently black punctate medially, along the margins opaque, irregular and apically somewhat erose, sparsely glandular-ciliolate; corolla rotate, 1.8–2.2 mm long, the tube ca. 0.5 mm long, the lobes oblong, 1.3–1.7 mm long, 0.5 mm wide, rounded apically, densely and prominently black punctate without except at margin, densely glandular-granulose on the margin and apically within, entire along margin; stamens 1.4–1.6 mm long, the filaments developmentally fused to corolla tube, the anthers apparently epipetalous, sessile, widely ovate, 1–1.2 mm long, 1–1.3 mm wide, apically obtuse, basally subcordate, densely and prominently black punctate abaxially; pistillode hollow, conic, ca. 0.5 mm long, the stigmatic area somewhat lobed. *Pistillate inflorescence:* sessile, 3–6-flowered; floral bracts coriaceous, ovate, ca. 1 mm long, 0.8–1 mm wide, acute apically, densely and prominently black punctate medially, entire and densely glandular-ciliolate along margin; peduncle obsolete; pedicels obconic, (1.5–)2–2.5(–3) mm long. *Pistillate flowers:* like staminate but 2.3–3.0 mm long; calyx cotyliform, 0.7–1 mm long, the tube ca. 0.2 mm long, lobes deltate, 0.5–0.8 mm long and wide, apically acute to subacuminate; corolla subrotate, 1.6–1.9 mm long, the tube ca. 0.5 mm long, the lobes oblong, 1.1–1.4 mm long, 0.5 mm wide; staminodes resembling stamens but filaments obsolete, the antherodes widely ovate, 1–1.2 mm long, 1–1.3 mm wide, apically obtuse, basally subcordate, densely and prominently black punctate abaxially, devoid of pollen; pistil conic, 1.3–1.5 mm long, the ovary 0.7–0.9 mm long, 1–1.2 mm diam, the stigma 3–5 mm long, 4-lobed, the lobes ligulate with variously lacerate margins; ovules 3–4, completely buried in the placenta. *Fruit* globose, 3–4 mm long and diam., densely and prominently black punctate with minute punctations in the upper 1/3 of fruit, the persistent stigma 3–4-lobed.

Distribution.—Endemic to western Luzon Island, in Ilocos, Bataan and Zambales provinces, Philippines, at 1,000–1,800 m elevation.

Ecology and conservation status.—*Myrsine medeciloae* is a rare species, occurring only in submontane mossy forests in the northern portion of the country. Because of habitat destruction, this species is considered endangered and most populations may be extinct.

Etymology.—It gives me great pleasure to dedicate this species to Melanie Medecilo, Philippine Adminstrator for the Philippine Plant Inventory Project. Ms. Medecilo is a budding systematic botanist with strong organizational skills, infinite patience, and much creativity.

Common name.—"Aribangib" (Negrito language, Madulid 1992).

Specimens examined: **PHILIPPINES. LUZON ISLAND. Baatan Prov.:** Mt. Mariveles, Lamao River, May 1905 (stam. fl), *R. Meyer BS 3114* (NY, US). **Ilocos Norte Prov.:** Burgos, Jul 1918 (fr), *M. Ramos BS 32757* (A); en route from miner's camp to Mt. Burnay

in Mt. Sicapoa Range, 1,700–1,800 m, 3 Dec 1975 (pist. fl, fr), *K. Iwatsuki et al. 719* (L-2 sheets.). **Zambales Prov.:** Mt. Lapulao, Nov–Dec 1907 (fr), *H. M. Curran & M. L. Merritt BS 8072* (US).

Myrsine medeciloae is closely related to *M. apoensis*, but can esily be distinguished by its linear or narrowly oblanceolate leaves, short, cylindric pedicels, and young branchlets and petioles rufous puberulent and glandular-granulose.

2. **Myrsine apoensis** (Elmer) Pipoly, comb. nov. **(Fig. 1D).** *Rapanea apoensis* Elmer, Leafl. Philipp. Bot. 2:669. 1910. TYPE: PHILIPPINES. MINDANAO ISLAND. North Cotabato Prov.: Mt. Apo, Todaya, May 1909 (pist. fl, fr), *A. Elmer 10629* (HOLOTYPE: PNH-destroyed; LECTOTYPE, here designated: A!; ISOLECTOTYPES: BISH!, GH-2 sheets!, K!, L!, NY!).

Tree to 4 m tall. *Branchlets:* terete, 1.5–2.5 mm diam., densely rufous glandular-papillose, glabrescent. *Leaves:* buds densely rufous glandular-papillose, margins densely translucent-ciliate along margins, glabrescent; blades membranaceous to chartaceous, symmetric, elliptic to lanceolate, 1.7–6.5 cm long, 0.8–1.8 cm wide, apically acuminate to an obtuse tip, basally acute, narrowly decurrent about 3/4 along the petiole toward base, smooth, subnitid and inconspicuously pellucid punctate above, inconspicuously pellucid punctate below, midrib immersed above, prominently raised below, the secondary veins 9–13 pairs, barely prominulous above and below, the submarginal collecting vein ca. 0.25 mm from margin, entire and revolute along margin; petioles deeply canaliculate, not marginate, 4–9 mm long, densely rufous glandular-papillose above, glabrescent. *Staminate inflorescence:* unknown. *Pistillate inflorescence:* a subsessile to sessile umbel, 3–6-flowered; peduncle rarely to 1 mm long, ca. 0.5 mm diam.; floral bracts chartaceous, oblong, 1.8–2.2 mm long, 1.3–1.5 mm wide, apically broadly rounded, prominently black punctate-lineate medially, slightly erose and sparsely glandular-ciliate along the margin; pedicels cylindric, 3–6 mm long. *Pistillate flowers:* 5-merous, chartaceous, 2–2.5 mm long; calyx cotyliform, 0.8–1 mm long, the tube ca. 0.2 mm long, the lobes suborbicular, 0.6–0.8 mm long and wide, apically acute, medially carinate at first, then flattening with age, densely red punctate and punctate-lineate, with a hyaline, irrregular, entire, rufous glandular-ciliolate margin; corolla rotate, 2–2.5 mm long, the tube ca. 0.2–0.4 mm long, the lobes lanceolate, 1.8–2.1 mm long, 0.2–0.4 mm wide, apically acute, densely and prominently red punctate-lineate medially, densely glandular-granulose toward apex within and along the margins, with margins densely glandular-granulose, entire; staminodes 1.2–1.4 mm long, the filaments 0.2–0.4 mm long, completely fused to corolla tube, the antherodes ovate, 0.9–1.1 mm long, 0.3–0.4 mm wide, apically rounded, basally cordate, devoid of pollen, the connective darkened dorsally; pistil obnapiform, the ovary 1.5 mm

long and diam., the style short, ca. 0.5 mm long, truncate terminally, the style ligulate, alate, the wings 4; ovules 3–5, partially immersed in the placenta. *Fruit* subglobose, slightly longer than wide, 2.6–3.5 mm long, 2.3–3 mm wide, prominently red punctate-lineate.

Distribution.—Endemic to Mindanao Island, on Mts. Apo and McKinley, North Cotobato, Davao and Davao del Sur provinces, at 1,666–2,900 m elevation.

Ecology and conservation status.—*Myrsine apoensis* is restricted to the mossy forests ocurring on the upper slopes and summits of the mountains it is known from. These forests are not commercially exploited, but are subject to destruction due to activities related to construction and maintenance of telecommunication towers. Therefore, the species should be considered highly endangered.

Etymology.—The specific epithet refers to the type locality, Mt. Apo, located at the junction of North Cotabato, Davao and Davao del Sur provinces.

Common names.—"Karyos" (Bagobo language, Merrill 1926); "Marintok" (Bagobo, Madulid 1992), "Tongog" (Bagobo language, Bisayan, Panay dialect, Madulid 1992).

Specimens examined. **PHILIPPINES. MINDANAO ISLAND. Davao del Sur Prov.:** Mt. Apo, [Todaya], N slope, Lake Linao, 2,100 m, 30 Oct 1946 (fr), *G. Edaño 1266 (PNH 1382)*, 1 Nov 1946 (fr), *G. Edaño 1267 [PNH 1383]* (A, PNH), 20 May 1974 (fr), *Univ. San Carlos 586* (L); Mt. McKinley, summit, 2,466 m, 13 Sep 1946 (fr), *G. Edaño 984 [PNH 1048]* (A, L, PNH);1,666 m 28 Aug 1946 (ster.), *G. Edaño 821 [PNH 1032]* (L, PNH). **North Cotabato Prov.:** Kidapawan Municipality, Mt. Apo Geothermal Project Site G, 06°59.5'N, 125°14'E, 1,820 m, 8 Nov 1992 (fr), *L. Co 3649* (A, CANB, CAHUP, K, L, PNH, PUH, TI, US).

Myrsine apoensis appears to be closely related to *M. medeciloae*, but is readily distinguished by the elliptic to oblanceolate leaf blades, canaliculate petioles, the longer, cylindric pedicels and the rufous glandular-papillose (not puberulent or granulose) young branchlets and petioles.

3. **Myrsine amorosoana** Pipoly, nom. nov. **(Fig. 1E–G).** *Rapanea retusa* Merrill, Philipp. J. Sci. 2:297. 1907. TYPE: PHILIPPINES. MINDORO ISLAND. Oriental Mindoro Prov.: Mt. Halcon, Nov 1906 (fr), *E. Merrill 5734* (HOLOTYPE: PNH-destroyed; LECTOTYPE, here designated: US!; ISOLECTOTYPES: K!, NY!), *non Myrsine retusa* Aiton, Hort. Kew 1:271. 1789. *nec Myrsine africana* var. *retusa* (Aiton) A. DC., Trans. Linn. Soc., Bot. 17:105. 1834.

Shrub or small tree to 3(–5) m tall. *Branchlets:* terete, 2.5–3 mm diam.glabrous. *Leaves:* buds glabrous with margins sparingly rufous glandular-ciliate; blades thinly coriaceous, symmetric, oblong or elliptic, (2.3–) 3–5(–6) cm long, (0.8–)1.5–1.9 cm wide, apically retuse to emarginate at tip, basally cuneate, smooth and nitid to laccate above, densely and prominently black punctate below, midrib prominently raised above and below,

the secondary veins 6–10 pairs, not visible above, more or less prominulous below, the submarginal connecting vein ca. 1 mm from margin, entire and revolute along the margin; petiole marginate, 4–9(–12) mm long, with a decurrent midrib prominently raised adaxially to base, glabrous. *Staminate inflorescence:* subsessile, 3–9-flowered; peduncle 1.5–2 mm long, 0.5–1 mm diam.; floral bracts coriaceous, deltate, ca. 0.5 mm long and wide, apically acute, inconspicuously punctate, irregular to erose and glandular ciliolate along the margin; pedicels cylindrical, 2–3 mm long. *Staminate flowers:* 4-merous, coriaceous, 1.5–1.8 mm long; calyx cupuliform, 1–1.2 mm long, the tube 0.3–0.5 mm long, the lobes oblate, 0.5–0.7 mm long, 0.6–0.8 mm wide, apically obtuse to subacute, medially prominently red punctate, irregular, erose, and sparingly glandular ciliolate along the margin; corolla rotate, 1.6–1.8 mm long, white, the tube ca. 0.2 mm long, the lobes elliptic, 1.4–1.6 mm long, 0.7–1 mm wide, apically obtuse, densely and prominently red punctate and punctate-lineate toward apex and along margins without, densely glandular-granulose outside and along margin within; stamens 1–1.2 mm long, the filaments fused to the corolla tube 0.2 mm, the anthers widely ovate, 0.8–1 mm long, 0.6–0.8 mm wide, apically acute, basally slightly cordate, opening by large subapical introrse pores, then large longitudinal slits, the connective inconspicuously brown-punctate dorsally at apex; pistillode ellipsoid, 0.7 mm long, the ovary 0.3–0.5 mm long, 0.2–0.3 mm diam., the stigma translucent, amorphous, 0.2 mm long. *Pistillate flowers:* like staminate but 1.6–1.9 mm long; calyx 1–1.2 mm long, the tube ca. 0.1 mm long, the lobes 0.9–1.1 mm long, 0.6–0.8 mm wide; corolla 1.6–1.9 mm long, the tube 0.2–0.3 mm long, the lobes 1.4–1.6 mm long, 0.2–0.3 mm wide; staminodes 0.8–1 mm long, the filament completely fused to the corolla tube in development, 0.3 mm long, the antherodes sublinear to ovate, 0.5–0.7 mm long, 0.1–0.2 mm wide, apically acute, the base not distinguishable; pistil globose, 1.3–1.5 mm long, the placenta globose, the ovules 4–6, in 2 series, the stigma 4-lobed, arrowhead-like, the lobes fin-shaped, ca. 0.5 mm long, 0.7 mm wide. *Fruit* globose, 2–3 mm long and in diam., violet at maturity, densely and prominently red punctate.

Distribution.—Endemic to the Philippines, from north central Luzon Island southward through Mindoro, Sibuyan and Negros Islands to northern Mindanao, at 1,400–2,825 m elevation. The collection from Bicol National Park (*B. Hernaez & M. Cajano CAHUP 572, 57283, 57284)* was undoubtedly from near the 1,900 m elevation and not the lower extreme indicated on the label.

Ecology and conservation status.—Frequent in mossy forest, "Ramayan" forest, dominated by gymnosperms and *Tristaniopsis* (Myrtaceae) and upper

montane moist forest, particularly on ultramafic substrates. *Myrsine amorosoana* forms large patches of individuals along ridgetops in forests dominated by *Phyllocladus hypophyllus* (Podocarpaceae), with an understory dominated by *Polyosma verticillata* (Escallionaceae). It occurs with a density of approximately 50 individuals per hectare, a figure perhaps exceeded only by *Myrsine dependens* (Ruíz & Pavón) Sprengel f., of the northern Andes of South America, and *M. pittieri* (Mez) Lundell of Costa Rica and Panama. It may be that some of the species currently under *Rapanea* and undergoing revision for the entire island of New Guinea, may have even more extensive populations. *Myrsine amorosoana*, by virtue of its large, but extremely localized populations, should be considered threatened.

Etymology.—This species is dedicated to my friend and colleague, Dr. Victor Amoroso, professor of biology and curator of the herbarium of Central Mindanao University, in Musuan, Bukidnon Province, Mindanao. Dr. Amoroso is an authority on the systematics of Philippine pteridophytes, a prodigious fieldworker and an enthusiastically supportive colleague. His indefatigable efforts in conservation and monitoring of the biodiversity of Mindanao's forests are exemplary.

Common names.—"Biribenlog" (Bikol language, *Ramos & Edaño BS 26577*); "Maromo" (Negrito, Madulid 1992).

Specimens examined. **PHILIPPINES. LUZON ISLAND.** *sine loc. esp.* 1792 (fr), *T. Haenke 440, 447, 472,* (NY). **Benguet Prov.:** Kabayan, Mt. Pulog National Park, 10 Aug 1992 (fr), *E. Barbon et al. PPI 8845* (A, BO, BRIT, K, L, PNH, US); Mt. Pulog, Feb–Mar 1925 (fr), *M. Ramos & G. Edaño BS 44936* (US). **Camarines Norte Prov.:** Dec 1913 (fr), *M. Ramos BS 1524* (A, L, NY), (stam. fl), *M. Ramos BS 1525* (A, L, NY). **Camarines Sur Prov.:** Mt. Isarog, "Dec 1928"[probably Nov] (fr), *G. Edaño BS 76198* (A, K, NY, PNH),1,370 m, 28 Nov 1928 ["Dec 1928"on lower label] *G. Edaño 630 {BS 76225}* (A, NY); *BS 76268* (NY); Mt. Isarog, Naga City, 6 Apr 1992 (fr), *Barbon et al. PPI 8223* (A, BO, BRIT, K, L, PNH); Mt. Isarog, Nov–Dec 1913 (fr), *M. Ramos 22009* (NY, US); Bicol National Park, Ocampo del Rosario, S access trail W of PLDT, 670–1,900 m, 22–27 Oct 1991 (fr), *B. Hernaez & M. Cajano CAHUP 57282, 57283, 57284* (CAHUP). **Mountain Prov.:** Mt. Pulog, 16°36'N, 120°54'E, 2,550–2,650 m, 30 Jan 1968 (fr) *M. Jacobs 7227* (A, K, L, LBC, PNH); 2,600–2,700 m, 1 Feb 1968 (fr), *M. Jacobs 7274* (A, K, L, LBC PNH); 2,300–2,500 m, 5 Feb 1968 (stam. fl), *M. Jacobs 7333* (A, K, L, PNH), 2,300–2,400 m, 17 Feb 1968 (fr), *M. Jacobs 7488* (L, PNH); Lake Pulog, Aug 1915 (pist. fl), *M. Ramos BS 23616* (A, K, PNH, US), 24–25 Oct 1965 (fr), *R. Robbins s.n.* (L). **Nueva Vizcaya Prov.:** Mt. Alzapan, May–Jun 1925 (fr), *M. Ramos & G. Edaño BS 45602* (NY). **Quezon [Tabayas] Prov.:** Mt. Binuang, May 1917 (fr), *M. Ramos & G. Edaño BS 28758* (A, K, PNH, US); Mt. Dingalan, Aug–Sep 1916 (stam. fl), *M. Ramos & G. Edaño BS 26577* (A, US); Mt. Mirador, summit, Antimonan Municipality, 13 Sep 1975 (fr), *B. Hernaez 3043* (CAHUP), Quezon National Forest Park, Atimonan summit, 400 m, 26 Aug 1984 (fr), *I. Lit IL84–001 {CAHUP 40296}* (CAHUP). **Sorsogon Prov.:** Jul–Aug 1915 (stam. fl), *M. Ramos BS 23512* (BISH, K, PNH, US). **MINDORO ISLAND. Prov. Oriental Mindoro:** Mt. Halcon, near Paitan, Dulangan River, 13°12'N, 121°12'E, 1,200 m (fr), *C. Ridsdale et al. 1703* (A, K, L, LBC, PNH); NE summit, 2,000–2,580 m, Apr–May 1995 (pist. fl), *E.*

Mandia 421 (CAHUP, DLSU); N coast, Mindoro, Subaan River headwaters, inland from San Teodoro, 1,200 m, 30 Apr 1986 (fr), *M. Coode et al. 5635* (A, K, L, LBC, PNH); Mt. Halcon, 15–24 Jun 1906 (fl), *M. Merritt BS 4449* (US), Nov 1906 (fr), *E. Merrill 5735* (L); NE Mindoro, Mustning, Mt. Halcon Complex, above Paitan on Dulangan River, 1,450–1,500 m, 11 May 1986 (fr), *M. Coode et al. 5765* (A, K, L, PNH). Rizal, Augilog Mar 1906 (fr), *A. Loher 6128* (K); *sine loc. esp.*, Nov 1914 (fr), *M. Ramos BS 1961* (L, NY). SIBUYAN ISLAND. **Prov. Romblon:** Mt. Guiting-guiting, Camp 3 above Magdiwang on ridge leading to Mayos' Peak, 1,400 m, 27 Aug 1989 (stam. fl), *G. Argent & E. Reynoso 89112,* (fr),*89113* (E, K, PNH); Magdiwang, Mt. Guiting-guiting, Mayos Peak, 12°28'N, 122°32'E, 5 Jun 1992 (fr), *B. Stone et al. PPI 6906* (A, BO, BRIT, K, L, PNH, US. NEGROS ISLAND. **Negros Occidental Prov.:** Mt. Canlaon Volcano, 1950 m, 10 Apr 1954 (fr), *G. Edaño PNH 21960, 8195 {PNH 22003}* (A, K, L, PNH). MINDANAO ISLAND. **Bukidnon Prov.:** Mt. Candoon, Jun–Jul 1920 (fr), *M. Ramos & G. Edaño BS 38918* (A); Mt. Lipa, Jun–Jul 1920 (fr), *M. Ramos & G. Edaño BS 38528* (A, L); Lantapan Municipality, Sitio Sungco, Mt. Kinasalapi, part of Kitanglad Mt. Range, W of Alanib River, SW slopes, ca. 08°00'05"N, 124°30'26" E; 2,090–2,360 m, 4 Dec 1984 (ster),*J. Pipoly et al. PPI 16610,* (BRIT, PNH) (fr) *Pipoly et al. PPI 16647.*(BRIT, PNH) (fr), *J. Pipoly et al. PPI 16684* (BRIT, PNH), 6 Dec 1994 (fr), *Pipoly et al. PPI 16871* 2,200–2,320 m, 14 Apr 1995 (fr), *J. Pipoly et al. 19551 {PPI 19796}* (BRIT, PNH), (fr), *19555 {PPI 19800}* (BRIT, PNH); Mt. Dulangdulang, Mt. Kitanglad Range, 20 km SE of Dalwangan, Malaybalay Municpality, 87°5'N, 124°56 E, 2,385–2,825 m, 25–30 May 1993 (fr), *B. Hernaez & M. Cajano 2380 {CAHUP 60561, 60562, 60563, 60564}* (CAHUP).

Myrsine amorosoana is most closely related to *M. oblongibacca*, but is separated by the symmetric, oblong to elliptic leaf blades with obtuse to rounded apices and revolute margins, and the globose fruits.

4. **Myrsine oblongibacca** (Merrill) Pipoly, comb. nov. **(Fig. 1C).** *Rapanea oblongibacca* Merrill, Philipp. J. Sci. 20:429. 1922. TYPE: PHILIPPINES. LUZON ISLAND. Ilocos Norte Prov.: Mt. Palimlim, Aug 1918 (fr), *M. Ramos BS 33256* (HOLOTYPE: PNH-destroyed; LECTOTYPE, here designated: A!; ISOLECTOTYPE: K!).

Glabrous shrub to 3 m tall. *Branchlets:* somewhat angulate at very tip, soon terete, 2–3 mm diam. *Leaves:* buds glabrous with margins sparsely glandular ciliolate; blade chartaceous to subcoriaceous, asymmetric, narrowly oblong to narrowly oblanceolate, 3–6(–7.4) cm long, 0.8–1.8 cm wide, apically subacuminate to obtuse, but blunt at tip, basally cuneate, decurrent on the petiole, smooth, prominently pellucid punctate and nitid above, prominently pellucid punctate and black punctate-lineate below, midrib prominently raised above and below, the secondary veins 7–12 pairs, not visible above, inconspicuous below, the submarginal collecting vein ca. 0.5 mm from margin, densely and prominently black punctate below, entire, and flat along margin; petioles canaliculate and marginate, 3–8 mm long, glabrous. *Staminate inflorescence:* unknown. *Pistillate inflorescence:* subsessile, or on an apparently annual, peduncle 1.5–2 mm long, up to 1 mm diam.; floral bracts chartaceous, linear, 0.5–0.7 mm long, 0.1–0.2 mm wide, apically acute, densely black punctate, entire and glabrous along the margin; pedicels cylindric, 2–3 mm long, sparsely black punctate-lineate.

Pistillate flowers: unknown; fruiting calyx 4–5-merous, cotyliform, 1–1.2 mm long, the tube ca. 0.2 mm long, the lobes irregular, ovate, 0.8–1 mm long, 0.5–0.7 mm wide, apically acute to acuminate, densely and prominently black punctate medially, densely glandular-ciliate along the margin. *Fruit* oblongoid, 5–8 mm long, 3–5 mm diam., the persistent stigma scar stylopodic, densely and prominently pellucid punctate-lineate.

Distribution.—*Myrsine oblongibacca* is endemic to the Philippines, occurring on the Island of Luzon, in Cagayan, Ilocos Norte, Nueva Ecija, Quezon, and Rizal provinces, and on the Island of Dinagat, just north of Mindanao Island. While no precise elevation has been listed on collections, one might surmise that it is a submontane species, and as such, would be expected at perhaps 800–1,500 m elevation.

Ecology and conservation status.—Virtually nothing is known of the ecology of *M. oblongibacca*. It is known only from historical collections, and recent expeditions made to the areas from which it was previously known have not resulted in recollections. However, Mt. Palimlim (Ilocos Norte), and Dinagat Island are areas containing significant pockets of vegetation on ultramafic soils. Therefore, it is possible that this species is another ultramafic specialist. Given the scanty remnants of forests left in the country, it is doubtful that we will ever know the natural distribution of *M. oblongibacca*. It is assumed that the species is highly endangered if not already extinct.

Etymology.—The specific epithet refers to the oblongoid fruit, a rarity among species of the genus.

Common names.—"Supak" (Igorot language, Madulid 1992).

Specimens examined. **PHILIPPINES.** LUZON ISLAND. **Cagayan Prov.:** Mt. Cagua Volcano, Oct–Nov 1929 (fr), *G. Edaño BS 78357* (K, NY, PNH), (fr), *G. Edaño BS 78412* (NY), (ster.), *G. Edaño BS 78424* (K, NY, PNH); Mt. Dos Cuernos, Apr 1929 (fr), *M. Ramos BS 77034* (NY); Bauan District, Mt. Tabuan, May 1929 (fr), *M. Ramos BS 77079* (NY); Mt. Balatongan, Nov 1929 (fr), *G. Edaño BS 78533* (NY). **Ilocos Norte Prov.:** Mt. Palimlim, Aug 1918 (fr), *M. Ramos BS 33311* (A, K, PNH, US). **Nueva Ecija Prov.:** Mt. Umingan, Aug–Sep 1916 (fr), *M. Ramos & G. Edaño 26418* (A, K, PNH, US). **Quezon [Tabayas] Prov.:** Mt. Dingalan, Aug–Sep 1916 (fr), *M. Ramos & G. Edaño BS 26548* (A, US). **Rizal Prov.:** Mt. Susong-Dalaga, Aug 1917 (fr), *M. Ramos & G. Edaño BS 29386* (A, K, PNH). DINAGAT ISLAND. **Surigao del Norte Prov.:** May 1919 (fl bud), *M. Ramos & J. Pasgasio BS 35194* (L).

Myrsine oblongibacca is most closely related to *M. amorosoana*, from which it is easily distinguished by its oblongoid fruits, and asymmetric, narrowly oblong or oblanceolate leaves with flat margins.

5. **Myrsine cruciata** (Philipson) Pipoly, comb. nov. **(Fig. 1H, I).** *Rapanea cruciata* Philipson, J. Bot. (London) 77:105. 1939. TYPE: MALAYSIA. SABAH [BRITISH NORTH BORNEO]: Pava Cave, Mt. Kinabalu, Upper Kinabalu, 2,400–3,050 m, 29 Mar 1932 (stam. fl), *J. & M. S. Clemens 28941* (HOLOTYPE: BM, n.v.; ISOTYPES*: A!,

K!, L!, NY!). *The isotype at Kew contains two distinct elements, one-half of the sheet bearing a twig of *M. cruciata* and the other an entity close to, if not conspecific with, *M. dasyphylla* Stapf; and both sides were correctly annotated by Philipson. However, the sheet at A bears two twigs of still another unknown *Myrsine* species entity with very prominent secondary and tertiary leaf venation. Thus no portion of *J. & M. S. Clemens 28941* housed at A corresponds to *R. cruciata.* On the sheet at NY, the left portion corresponds to *M. cruciata*, while the right hand portion to *M. dasyphylla* Stapf. The L sheet is entirely *M. cruciata*.

Shrub or tree to 5 m tall. *Branchlets:* angulate, 2.5–3.5 mm diam., somewhat lenticellate, glabrous. *Leaves:* buds with margins sparingly glandular-ciliolate, glabrescent; blade cartilaginous, symmetric, oblanceolate to oblong, (3–)6–9.5 cm long, 1.8–2.5 cm wide, apically rounded to obtuse, retuse to emarginate at very tip, basally cuneate, smooth and laccate above, pallid and conspicuously black-lineate and prominently black punctate along margin below, the midrib impressed above, prominently raised below, the secondary veins 16–22 pairs, scarcely or not visible above, scarcely visible below, the submarginal collecting vein ca. 0.5 mm from margin, entire and revolute along the margin; petiole marginate, 3–5 mm long, the midrib elevated medially adaxially, glabrous. *Staminate inflorescence:* subsessile, 2–5-flowered; peduncle ca. 2–3 mm long, ca. 1 mm diam.; floral bracts coriaceous, deltate, 1.5–2 mm long, 1–1.3 mm wide, apex acute or obtuse, the margin entire, glandular cioliolate; pedicels angulate, 2–3 mm long. *Staminate flowers:* 4–5-merous, chartaceous 3–3.5 mm long; calyx cotyliform, 2.3–2.8 mm long, the tube 0.3–0.4 mm long, the lobes ovate, 2–2.4 mm long, 1.2–1.5 mm wide, apically obtuse to acute, medially thickened, conspicuously (not prominently) black punctate, entire and densely glandular-ciliate along the margin; corolla rotate, 3.3–3.5 mm long, the tube 0.8–1.1 mm long, the lobes elliptic 2.3–2.5 mm long, 1–1.2 mm wide, apically obtuse, densely and prominently black-lineate medially, black punctate marginally, glandular-granulose along the margin and near the margin within; stamens 3–3.2 mm long, the filaments 0.8–1.1 mm long, connate and developmentally adnate to the corolla tube, the anthers oblong, 1.8–2 mm long, 1–1.2 mm wide, apically apiculate, basally cordulate, dehiscent by wide longitudinal slits, the connective eglandular; pistillode conic, ca. 0.3 mm long and diam., hollow. *Pistillate inflorescence:* like staminate but peduncle accrescent annually to 3 mm long, ca. 1 mm diam.; pedicels 2–2.5 mm long; floral bracts 1.5–2 mm long, 1–1.3 mm wide. *Pistillate flowers:* like staminate but 2.8–3 mm long, the tube 0.8–1.1 mm long, the lobes 1.9–2.2 mm long, 1–1.2 mm wide; staminodes 2.3–2.8 mm long, the filaments 0.6–1.1 mm long, the antherodes ovate, 2–2.2 mm long, 0.4–0.6 mm wide, apically acute, basally sagittate; pistil ellipsoid to subglobose, 2–2.2 mm long, 1.3–1.5 mm wide, the stigma ligulate, tortuous, ca. 1 mm long, stylopodic basally, the placenta subglobose,

the ovules 6–8, biseriate. *Fruit* ovoid to oblongoid, (3–)5–7 mm long, 3–5 mm diam., densely and prominently black punctate and punctate-lineate.

Distribution.—In the Philippines, *Myrsine cruciata* is known from the hills of Mt. Beaufort, above Puerto Princesa on the island of Palawan, and from unknown localities in Abra and Zambales provinces. Outside of the Philippines, it is known otherwise only from Mt. Kinabalu in Sabah, Malaysia. The altitudinal range of the species is 850 to 2,500 m elevation.

Ecology and conservation status.—*Myrsine cruciata* appears to be restricted to sandy soils on quartzite rocks. Regarding its conservation status, no recent collections have been made from Luzon, and those populations may be extinct. However, the populations in Palwan appear to be surviving so far. Given these circumstances, *Myrsine cruciata* should be considered a threatened species.

Etymology.—The specific epithet refers to the tetramerous perianth parts on the type specimen.

Common name.—"Tongog" (Bagobo language).

Specimens examined. **PHILIPPINES. LUZON ISLAND. Abra Prov.:** *sine loc. esp.* Jan–Feb 1909 (fr), *M. Ramos BS 7263* (NY, US). **Zambales Prov.:** *sine loc. esp.*, Dec 1907 (fr), *M. Ramos BS 5050* (NY, US). **PALAWAN ISLAND.** Municipality Puerto Pincesa, Mt. Beaufort, W spur, 815 m, 28 Mar 1984 (fr), *C. Ridsdale SMHI 225* (A, K, L, PNH); Narra, Victoria Peaks, Trident Mining Co. Concession, 490–590 m, 18 May 1984 (fr), *C. Ridsdale SMHI 1732A*,*C. Ridsdale SMHI 1741* (A, K, L, PNH), 620 m, 20 May 1984 (fr), *A. Podzorski SMHI 2125* (A, CAHUP, K. L, PNH), *A. Podzorski SMHI 2130* (A, K, L, PNH), 500 m, *J. Dransfield SMHI 1292* (A, K, L, PNH). **MALAYSIA. SABAH:** Mt. Kinabalu, Pig Hill, 7,000 ft., 18 Feb 1964 (fr), *W. Chew & E. Corner RSNB 4372* (K), 2,300 m, 24 Feb 1964 (fr), *W. Chew & E. Corner RSNB 4493* (K), Upper Kinabalu, 1,830–4,115 m, 2 Jun 1932 (stam. fl), *J. & M. Clemens 30258* (K); Mari Pari, 1,524 m, 27 Mar 1933 (fr), *J. & M. Clemens 32378* (K).

While the population of *Myrsine cruciata (sensu stricto)* from the type locality has mostly oblong leaves instead of oblanceolate ones, and the texture is somewhat thicker, I have no doubt that the Philippine and Bornean populations are conspecific. This species has often been confused with *Myrsine oblongibacca*, but may easily be separated from it by the wider, symmetric leaf blades, angulate branchlets, and larger, mostly ovoid fruits. In most of its range through the Philippines, *Myrsine cruciata* is most readily compared to *M. densiflora*, but is immediately distinguished by the cartilaginous and laccate leaf blades with retuse to emarginate tips, and the larger fruit. *Myrsine cruciata* inhabits sandy soils on quartzite rocks, apparently adjacent to ultramafic substrates in submontane and montane habitats, while *M. densiflora* occurs on ultramafic soils behind coastal beaches.

6. **Myrsine densiflora** Scheffer, Comm. Myrs. Archip. Ind. 50. 1876. **(Fig. 2A, D).** *Rapanea densiflora* (Scheffer) Mez in Engler, Pflanzenr. 9 (IV. 236):365. 1902. TYPE: INDONESIA. IRIAN JAYA [WEST NEW GUINEA]: S coast, along Daurga

River, Princess Marianne Strait, May 1828 (stam. fl), *A. Zippelius s.n.* (HOLOTYPE: L, n.v., fragment, A!).

Shrub or tree to 3–5(–10) m tall. *Branchlets:* angulate, (3–)3.5–5 mm diam., longitudinally ridged, lenticellate with age, glabrous. *Leaves:* buds with margins densely glandular-ciliolate, glabrescent; blades coriaceous, symmetric, elliptic to obovate, rarely oblanceolate, (5.5–)6–14(–16) cm long, 3–5(–6) cm wide, apically broadly rounded to acute, basally cuneate, slightly decurrent on petiole, dull or somewhat nitid above, scrobiculate above and below, densely and conspicuously black punctate and punctate-lineate below, the midrib impressed above, prominently raised below, the secondary veins 13–17 pairs, prominulous above and below, connected by an inconspicuous submarginal collecting vein less than 0.5 mm from the margin, inrolled, densely and prominently black punctate below along the margin. *Staminate inflorescence:* fasciculate, 3–9-flowered; peduncle 2–3.5 mm long, 1–2 mm diam. (the longer peduncles apparently all on one year's growth); floral bracts coriaceous, deltate, 0.8–1.0 mm long and wide, apically rounded or obtuse, densely and prominently black punctate apically, the margin entire, glabrous; pedicels cylindric, 1.5–2 mm long, prominently reflexed at anthesis, conspicuously black lineate. *Staminate flowers:* 4-merous, chartaceous, 1.8–2.3 mm long; calyx cotyliform, 0.8–1.0 mm long, the tube ca. 0.2 mm long, the lobes widely ovate, 0.6–0.8 mm long, 0.7–0.9 mm wide, apically acute, medially prominently black punctate and punctate-lineate, the margin opaque, irregular, glabrous; corolla subrotate, 1.7–2.2 mm long, the tube ca. 0.1 mm, the lobes oblong or elliptic, 1.7–2.2 mm long, 0.7–1.0 mm wide, apically obtuse to rounded, medially densely and prominently black punctate throughout, punctate-lineate apically and medially, entire, and densely glandular-granulose along the margin, glabrous within; stamens 1.3–1.5 mm long, the filaments flat, adnate to adaxial corolla tube and lobe, inconspicuous, 0.2–0.3 mm long, the anther ovate to obcordate, 1.1–1.3 mm long, 0.5–0.7 mm wide, apically acute, basally broadly cordate, the connective densely and prominently brown punctate dorsally; pistillode conic, 0.2–0.3 mm long, 0.3–0.4 mm diam., hollow, without style or stigma. *Pistillate inflorescence:* like staminate but peduncle to 3 mm long, 2 mm diam.; pedicels 1.5–2.5 mm long. *Pistillate flowers:* like staminate but 1.3–1.5 mm long; calyx 0.6–1 mm long, the tube ca. 0.2 mm long, the lobes 0.5–0.7 mm long, 0.6–0.8 mm wide; corolla 1.3–1.5 mm long, the tube ca. 0.1 mm long, the lobes 1.2–1.4 mm long, 0.4–0.6 mm wide; staminodes like stamens but 0.7–0.9 mm long, the filaments ca. 0.1 mm long, the antherodes irregular, flat, deltate, 0.6–0.8 mm long and wide, apically acute, base not distinguishable; pistil 1.3–1.5 mm long; the ovary ellipsoid, 0.3–0.5 mm long, 0.2–0.3 mm diam.; stigma ligulate, 0.8–1 mm long, 0.2–0.3 mm wide, apically truncate; placenta

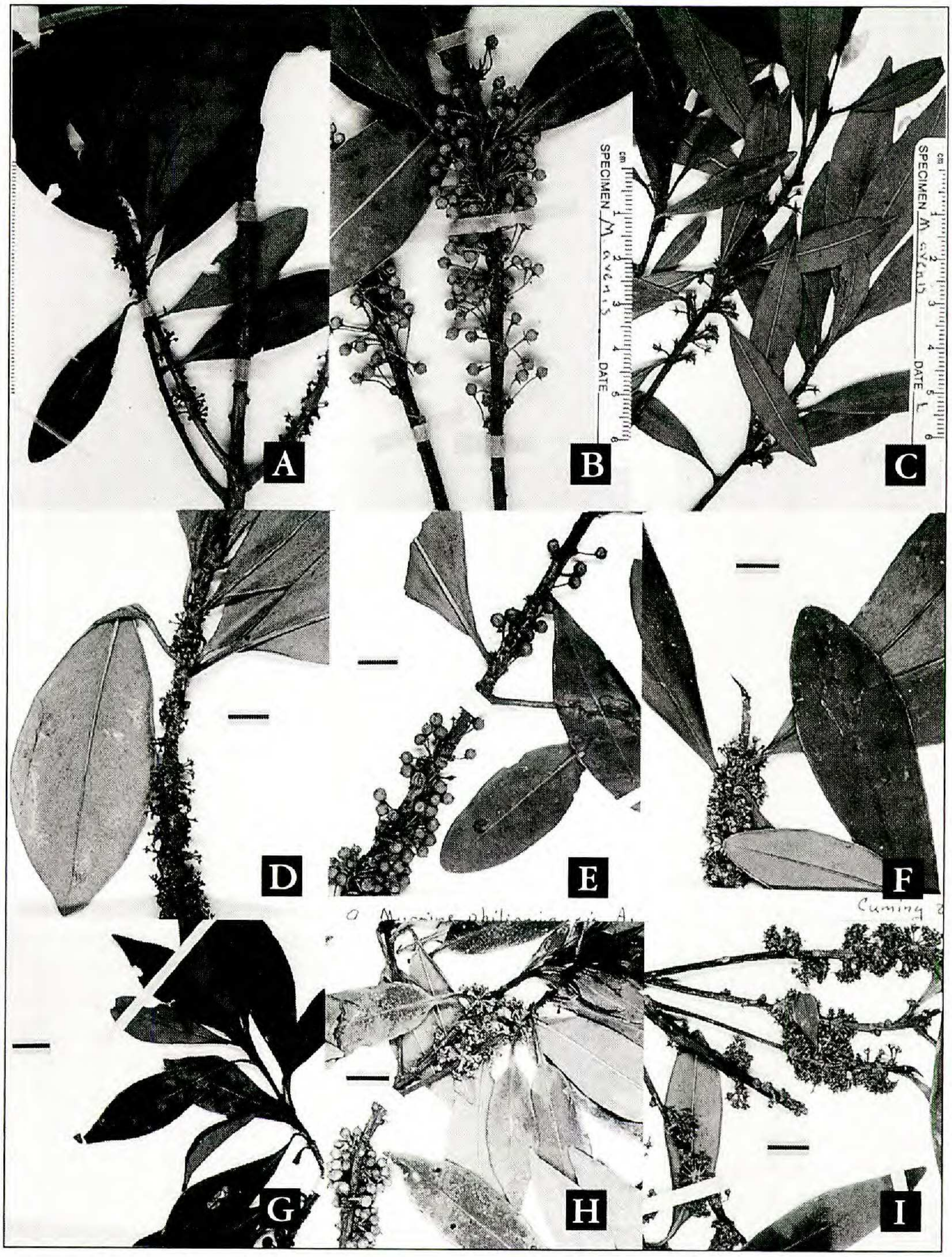


FIG. 2. A. *Myrsine densiflora* Scheffer, showing leaf shape convergent with *M. philippinensis*, (*H. Lam 3373*). B-C. *Myrsine avenis* (Blume) A. DC. B. Pistillate branch, showing long fruiting pedicels and inconspicuous venation of leaf blades (*A. Elmer 14286*). C. Staminate branch, showing leaf variation and sparse inflorescences (*Loher 14097*). D. *Myrsine densiflora*, growth form from Palawan, superficially resembling *M. aralioides*(*C. Ridsdale 1084*). E-F. *Myrsine philippinensis* A. DC. E. Pistillate branch, showing globose fruit (*M. Ramos & J. Pagasio BS 34755*). F. Staminate branch, showing inflorescence and leaf apices (isotype).G. *Myrsine mindanaensis* (Elmer) Pipoly, showing terete branchlets and globose fruits; (isotype) H-I. *Myrsine avenis* (Blume) A. DC. H. Pistillate branch (*R. Williams 1346*). I. Staminate branch. *(C. R. Robinson 1408*). Black scale bar equals 1 cm, smallest unit on white scales equals 1 mm.

subglobose, the ovules 2–3, uniseriate, immersed in the placenta. *Fruit* depressed-globose, 5–6 mm long and in diam., densely and prominently black punctate and punctate-lineate apically, the same punctation types but pellucid basally.

Distribution.—In the Philippines, this species is known from the Islands of Batan to Luzon(Pangasinan and Zambales provinces), Panay (Capiz Province), Negros (Negros Oriental Province), Samar Island (Western Samar Province), Dinagat (Surigao del Norte Province), Mindanao (Surigao City), and Palawan Island. Outside the Philippines, it is known from the Talaud Islands, Moluccas, Key Islands, Irian Jaya and Papua New Guinea, from sea level to 300 m.

Ecology and conservation status.—*Myrsine densiflora* occurs on ultramafic soils, just behind beaches in grasslands along streams at or near coastlines throughout its range. With ample habitat still remaining, the species does not appear to be threatened. The occurrence of *Myrsine densiflora* on Mt. Iraya on Batan Island might first be considered very unusual, but recent evidence shown by Richard et al. (1986) indicates that "Batan Island is noteworthy for the occurrence, within Mt. Iraya lavas, of ultramafic xenoliths (harzburgites, dunites, lherzolites, wehrlites, websterites) which have mantellic origin and had undergone strong interactions with metasomatic fluids." Thus, similar geologic conditions, such as those found on Mindanao Island in the Provinces of Surigao del Norte and Surigao del Sur, and areas of southwestern Luzon (Zambales), allow us to predict that *Myrsine densiflora* may occur in these areas on ultramafic soils behind mangrove formations.

Etymology.—The specific epithet refers to the dense clusters of slender pedicels and flowers, often appearing congested in early flowering.

Common names.—"Tongog" (Bagobo language); "Maga" and "Magaspang" (Bisayan, Panay dialects).

Representative specimens examined: **PHILIPPINES.** BATAN ISLAND. **Batanes Prov.:** Mt. Iraya,122°00'E, 20°28'N, 750 m, 4 Jul 1989 (stam. fl), *E. Fernando 1003* (LBC), 800 m, 9–16 Nov 1964 (fr), *S. Hatusima & M. Sato 29059 {PNH 111132}* (PNH). LUZON ISLAND. **Pangasinan Prov.:** Dec 1907 (fr), *M. Ramos s.n.* (NY). **Zambales Prov.:** Acoje Mine Concession Area, Santa Cruz, ca. 15°46'N, 120°00'E, low elevation, 23 May 1986 (pist. fl bud), *C. Ridsdale & E. Reynoso 1440* (A, K, L, LBC, PNH). PANAY ISLAND. **Capiz Prov.:** Below Mt. Salibongbong, Jul 1919 (fl bud), *A. Martelino & G. Edaño BS 35612* (A). SAMAR ISLAND. **Western Samar Prov.:** Barangay Tinabanan, Marabut, 13 Feb 1992 (fr), *Barbon et al. PPI 6094* (A, BOG, BRIT, K, L, PNH). DINAGAT ISLAND. **Surigao del Norte Prov.:** Loreto Municipality, 26 Sep 1991 (fr), *F. Gaerlan et al. PPI 3476* (A, BRIT, K, PNH), 1902, (fr), *G. Ahern FB 444* (NY). NEGROS ISLAND. **Negros Oriental Prov.:** Sibulan, Kabalinan, Lake Balinsasayao, 23 May 1991 (fr), *E. Reynoso et al. PPI 1087* (A, BO, BRIT, K, L, PNH, US). PALAWAN ISLAND. **Palawan Prov.:** N of Tagburos, ca. 17 km N of Puerto Princesa, 27 Oct 1985 (stam. fl), *C. Ridsdale 1084* (A, K, L, PNH). MINDANAO ISLAND: **Surigao Prov. [del Norte ?]:** Apr 1919 (fr), *M. Ramos & J. Pasgasio BS 34625* (NY), Jun 1919 (fr), *M. Ramos & J. Pasgasio BS 34755* (A). **Surigao del Norte Prov.:** Surigao City,

Apr–May 1911 (pist. fl), *C. Piper BS 237* (US). **INDONESIA.** SULAWESI [CELEBES]. **Talaud Islands:** Miangas Paui Baronlo, 11 Jun 1926 (stam. fl), *H. J. Lam 3373* (BO, K); Karakelang, G. Piapi, 300 m 31 May 1926 (stam. fl), *H. Lam 3258* (A, BO, K); Talaud, Merampi, 100 m, 13 Jun 1926 (stam. fl), *H. Lam 3420* (BOG, K); Salawati, P. Rumbobo, *J. Teysmann 7471* (BO, K). MOLUCCAS: Obi. Paui Santari, 2 m, 28 Nov 1937 (pist. fl), *Nedi 665* (BO, K). IRIAN JAYA: West Irian Jaya: Seacoast below Sukarnapura (=Hollandia), 11 Aug 1966 (stam. fl), *A. Kostermans & Soegeng 311* (BO, K). **PAPUA NEW GUINEA**: W SEPIK DISTRICT: Selio Island Aitape subdistrict, ca. 03°10'S, 142 °30'E, sea level, 31 May 1969 (stam. fl), *A. Millar & J. Vandenberg NGF40880* (K, LAE). ADMIRALTY ISLANDS. **Manus Island. Manus Prov.:** Lorengau Subprovince, Lorengau, 02°2'30" S, 147°15'30" E, 40 m, 22 Mar 1981 (stam. fl), *K. Kerenga et al. LAE 77490* (K, LAE); Milne Bay, Subprovince Misima, 11°22'S, 154°11'E, 22 Mar 1979 (fr), *O. Gideon LAE 76035* (A, LAE); Archip. Key, 1889 (pist. fl), *O. Warburg 21830* (A-2 sheets); Eastern Highlands District, 06°23'S, 145°58'E, 2,300 m, 3 Jul 1963 (fr), *T. Hartley 11955* (A, CSIRO, LAE).

Myrsine densiflora is very closely related to *M. philippinensis*, but is readily separated from it by the coriaceous leaves scrobiculate above and below, the leaf apices not emarginate or retuse at tip, and the smaller pedicels. The species has populations which at times contain individuals with extremely coriaceous leaves and rather robust, albethey short, peduncles (*C. Ridsdale 1084*), resulting in confusion with *Myrsine aralioides* (Philipson) Pipoly. However, the depressed-globose fruit is unique among species of *Myrsine* in the region. *Myrsine densiflora* is restricted to ultramafic soils behind beach formations at low elevations, while *M. aralioides* is clearly a montane forest species. The edaphic specificity of the species and narrowly defined ecological tolerances account for its rather spotty distribution. While *Myrsine densiflora* may appear to be parapatric with *M. philippinensis,* the latter is a mangrove species, occuring in the mangrove proper with such other species as *Aegiceras corniculatum* (Myrsinaceae).

7. **Myrsine peregrina** (Mez) Pipoly, comb. nov. **(Fig. 3F, G).** *Rapanea peregrina* Mez, Repert. Spec. Nov. Regni Veg. 16:424. 1920. TYPE: PHILIPPINES. MINDANAO ISLAND. Davao del Sur Prov.: Camp Keithley, Lake Lanao, Jun 1907 (fr), *M. S. Clemens 917* (HOLOTYPE: PNH-destroyed; LECTOTYPE, here designated: US!; ISOLECTOTYPE: A!).

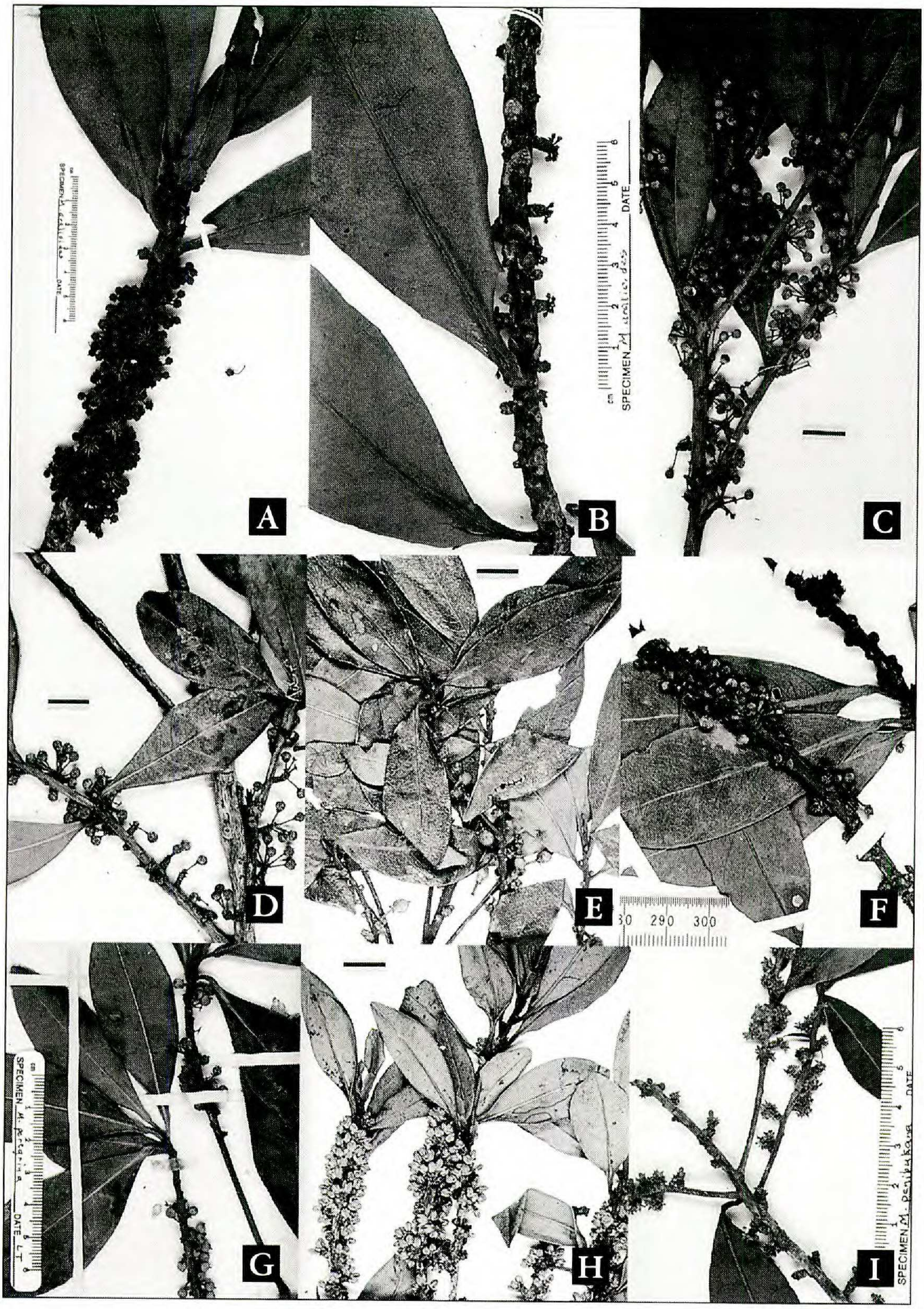
Rapanea venosa Elmer, Leafl. Philipp. Bot. 2:672. 1910. *non Rapanea venosa* (A. DC.) Mez, Pflanzenreich 9(IV. 236):386. 1902, *nec Myrsine venosa* A.DC., Ann. Sci. Nat., Ser. 2, 16:86. 1841. TYPE: PHILIPPINES. MINDANAO ISLAND. Davao Prov.; Mt. Apo (Todaya), District of Davao, 2,000 m, Aug 1909 (stam. fl), *A. Elmer 11445* (HOLOTYPE: PNH-destroyed; LECTOTYPE, here designated: GH!, ISOLECTOTYPES: A!, BISH!, K!, L!, NY!).

Tree to 6 m tall. *Branchlets:* angulate, 2–3 mm diam., glabrous. *Leaves:* buds with margins sparsely translucent-ciliate, glabrescent; blades coriaceous, asymmetric, oblanceolate to elliptic, 5–12 cm long, 1.5–3.5 cm wide, apically short-acuminate, the acumen ca. 3–7 mm long, basally obtuse or rarely acute, nitid, densely and prominently pellucid punctate above, pallid below, midrib immersed above, prominently raised below, the second-

ary veins 21–32 pairs, prominulous above, less conspicuous below, the submarginal collecting vein ca. 0.5 mm from margin, entire, revolute, and bordered by numerous prominently pellucid punctations below along margin; petiole marginate, 6–11 mm long, glabrous. *Staminate inflorescence:* umbellate, sessile to subsessile, 3–9-flowered, the peduncle obsolete to 2.5 mm long, ca. 1.0 mm diam.; floral bracts coriaceous, widely ovate, 0.8–1 mm long, 0.9–1.2 mm wide, apex rounded, the margin entire, sparsely glandular-ciliate, glabrescent; pedicels obconic, 3–5 mm long, reflexed in anthesis. *Staminate flowers:* chartaceous, 4-merous, 2.2–2.5 mm long; calyx cotyliform, 1–1.3 mm long, the tube ca. 0.1 mm long, the lobes ovate, 0.9–1.2 mm long, 0.5–0.8 mm wide, apically acutish to obtuse, densely and prominently red punctate, sparsely red punctate-lineate, irregular and glandular-ciliate along the margin; corolla rotate, 1.8–2.2 mm long, the tube ca. 0.2 mm long, the lobes 1.6–2 mm long, 0.8–1 mm wide, apically obtuse, cucullate, densely and prominently red punctate-lineate medially, red punctate near margins, on the margins densely glandular-granulose, stamens 1–1.5 mm long, the filaments ca. 0.3 mm long, developmentally fused to adaxial corolla tube and adjacent lobe, the anthers broadly ovate, 1–1.2 mm long, 0.8–1 mm wide, apically obtuse to rounded, basally subcordate, dehiscent by wide longitudinal slits, the connective brownish punctate apically and just above point of filament attachment; pistillode conic, ca. 1 mm tall, 0.8 mm wide, the placenta with two minute, infertile ovules. *Pistillate inflorescence:* like staminate but peduncle 1–5 mm long, ca. 1 mm diam. (breaking off at extreme length); pedicels 0.5–3.5, accrescent in fruit. *Pistillate flowers:* like staminate but 1.8–2.2 mm long, calyx 1.2–1.4 mm long, 0.5–0.4 mm wide, apex acute; corolla 1.8–2 mm long, the tube 0.5 mm long, the lobes 1.3–1.5 mm long, the apically acute; staminodes 1.3–1.5 mm long, the tube adnate to the corolla tube, the antherodes deltate, malformed, 0.5–0.7 mm long, apically acute, basally sagittate, hollow; pistil obnapiform, the ovary globose, 1.3–1.5 mm long and in diam., the stigma stylopodic, lobed, 0.3–0.5 mm long, the placenta ovoid, the ovules 4, uniseriate. *Fruit* subglobose, longer than wide, 2.5–3.5 mm long, 2.2–3 mm diam., prominently red punctate-lineate.

Distribution.—*Myrsine peregrina* is endemic to the Philippines, occurring from northern Luzon Island (Batan) southward through Luzon, Mindoro and Panay, to Mindanao Island from 2,090–2,800 m elevation.

Ecology and conservation status.—*Myrsine peregrina* occurs in local populations, at the interface of the submontane and montane "mossy forests," in areas with high incident light. The type of *Rapanea peregrina* was collected in a swamp near Lake Lanao. I have observed it to be extremely localized, and where it occurs, there are approximately 12 individuals per hectare, rarely reaching 9 cm DBH. This species seems to thrive in areas of distur-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bance, such as gaps produced by natural or man-made treefalls, so it appears resilient enough to consider it not threatened at this time.

Etymology.—The specific epithet means "travelling and migratory," perhaps alluding to this species broad distribution atop mountains throughout the country.

Common names.—"Marimbakawan" (Palaweño and Tagbanwa languages); "Korios" (Bisayan-Cebuano dialect)- generic term related to long terminal bud; "Tongog" (Bagobo language).

Specimens examined: **PHILIPPINES. BATAN ISLAND. Batanes Prov.:** Mt. Iraya, Jun–Jul 1930 (stam. fl), *M. Ramos BS 80268* (A). **LUZON ISLAND. Mountain Prov. [Bontoc]:** Mt. Caua, Mar 1920 (stam. fl), *M. Ramos & G. Edaño BS 37982* (K, PNH); Bontoc Sub-Prov., Bauko, On slopes of Mt. Data 2,100–2,500 m, 10–13 Feb 1964 (fr), *W. Stern & J. Rojo 2299* [*PNH 92363*] (CLP, PNH). **Nueva Ecija Prov.:** Mt. Umingan: Aug–Sep 1916 (fr), *M. Ramos & G. Edaño BS 26397* (A, US). **MINDORO ISLAND. Mindoro Oriental Prov.:** Mt. Halcon, Mar 1922 (pist. fl, fr), *M. Ramos & G. Edaño BS 40712* (A, K, L, PNH, US); NE summit, 2,000–2,450 m, Apr–May 1995 (ster), *E. Mandia 555* (CAHUP, DLSU, PNH). **PANAY ISLAND. Capiz Prov.:** Mt. Bulilao, Jun 1919 (stam. fl), *A. Martelino & G. Edaño BS 35682* (A). **Iloilo Prov.:** Iwa Ilaya [Iwaya] to Coyaoyao [Koya], 10 Sep 1936 (stam. fl), *T. Hosokawa 8560* (BISH). **MINDANAO ISLAND. Bukidnon Prov.:** Mt. Katanglad, Mar 1949 (fr), *M. Sulit PNH 10054* (A, L, PNH, US), 14 Apr 1949 (fr), *M. Sulit PNH 10125*, (A, K, L, PNH), Mar–Apr 1949 (fr), *G. Edaño PNH 11595* (A, PNH); Municipality Lantapan, Sitio Sungco, Mt. Kinasalapi, part of Kitanglad Mt. Range, W of Analib River, ca. 08°00'05" N, 124°30'26" E, 2,090–2360 m, 16 Nov 1994 (fr), *J. Pipoly et al. PPI 16584* (BRIT, PNH); Bukidnon, Kaatoan, above *Cinchona* plantation, 1,000 m, 10 Oct 1953 (ster.), *B.B. Britton 421 {PNH 19646}* (L, PNH). **Davao Prov.:** Mt. McKinley, E slopes, 2,250 m, 25 Sep 1946 (fr), *G. Edaño 1051 {PNH 1564}* (L, PNH); Mt. Apo, near Sulphur Spring, 2,100 m, 15 Nov 1946 (fr), *G. Edaño 1536 {PNH 1540}* (L, PNH). **Davao del Sur Prov.:** Mt. Apo, [Todaya], N slope, Lake Lanao, 2,100 m, 30 Oct 1946 (fr), *G. Edaño 1232 {PNH 1412}* (L, PNH); Mt. Kampalili, Mar–Apr 1949 (fr), *G. Edaño PNH 11565* (A, K, L-2 sheets, PNH, US); *PNH 11595* (A, L, PNH, US); Mt. Apo, Baklayan, 1,800 m, 11 Nov 1946 (fr), *G. Edaño 1445 (PNH 1557)* (A, L), 15 Nov 1946 (pist.fl), *G. Edaño 1535 (PNH 1553)* (A), Mt. Apo, 1,970 m, 13 Mar 1956 (fr), *J. Pancho 2587 {CAHUP 4124} {PNH 34613}* (CAHUP, PNH). **Misamis Oriental Prov.:** NE slopes of Mt. Malindang, Lake Duminagat, 1,763 m, 5 Jan 1993 (fr), *F. Gaerlan et al. PPI 10949* (A, BO, BRIT, K, L, PNH); Mt. Malindang, *M. Mearns & W. Hutchinson FB 4573* (FS). **North Cotabato Prov.:** [Todaya] Mt. Apo, 2,134 m, Aug 1909 (pist. fl, fr), *A. Elmer*

FIG. 3. A-B. *Myrsine aralioides* (Philipson) Pipoly. A. Pistillate branch, showing infructescences (*J. & M. Clemens 27801*). B. Staminate branch. (*J. & M. Clemens 50807*). C. *Myrsine glandulosa* (Elmer) Pipoly, pistillate branch, showing elongate peduncles (isotype). D.*Myrsine fastigiata* (Elmer) Pipoly, pistillate branch. (*M. Ramos & G. Edaño 38494* (isotype)F-G. *Myrsine peregrina* (Mez) Pipoly. F. Pistillate branch showing leaf texture (isotype, *Rapanea venosa Elmer*). G. Pistillate branch (lectotype). H.*Myrsine fastigiata* (Elmer) Pipoly, staminate branch, showing crowded fascicles (*M. Jacobs 7564*). I. *Myrsine penibukana* (Philipson) Pipoly, staminate branch showing perennating peduncles forming "short shoots" (*J. & M. Clemens 50295*). Black scale bar equals 1 cm, smallest unit on white scales equals 1 mm.

11456 (A, BISH, GH, K, L, NY, PNH, US); Mt. Apo, 7,000 ft, 15 Nov 1946 (pist. fl, fr), *G. Edaño PNH 1540* (A, PNH), 15 Nov 1946 (pist. fl), *G. Edaño PNH 1553* (A, PNH); Kidapawan Municipality, Mt. Apo Geothermal Project, Lake Venado, 11°32'N, 125°21'E, Oct 1992 (fr), *D. Lagunzad 870* (PUH).Site C1, 06°59.8'N, 125°14'E, 1,725 m, Oct 1992 (fr),*D. Lagunzad 961* (PUH). **South Cotabato Prov.:** Mt. Matutum, 7,000 ft. Apr 1932 (fr), *M. Ramos & G. Edaño BS 85048* (A), 15 Apr 1992 (fr), *F. Gaerlan et al. PPI5361* (A, BRIT, K, L, PNH, US). **PALAWAN ISLAND. Palawan Prov.:** Lipun Island, Lipun Peak, 215 m, 28 Apr 1964 (fr), *D. Mendoza PNH 91353* (L, PNH).

Myrsine peregrina can be confused with *M. densiflora,* but is easily distinguished by the longer, obconic pedicels, short-acuminate and asymmetric leaf blades.

8. Myrsine mindanaensis (Elmer) Pipoly, comb. nov. **(Fig. 2G).** *Rapanea mindanaensis* Elmer, Leafl. Philipp. Bot. 2:671. 1910. TYPE: PHILIPPINES. MINDANAO ISLAND. North Cotabato **Prov.:** [Todaya], Mt. Apo, Aug 1909 (fr), *A. Elmer 11332* (HOLOTYPE: PNH-destroyed; LECTOTYPE: K !; ISOLECTOTYPES: A!, BISH!;GH!; L!, NY!).

Shrub or tree to 8 m tall. *Branchlets:* terete, longitudinally ridged, 2.5–3.5 mm diam., sparsely and minutely rufous-papillose, early glabrescent. *Leaves:* buds essentially glabrous, the margins minutely rufous glandular-ciliolate, early glabrescent; blades chartaceous, slightly asymmetric, narrowly oblanceolate to narrowly oblong, 4.5–11.5 cm long, (1.8–)2–3.5 cm wide, apically acuminate, the acumen 0.5–1 cm long, basally acute, decurrent on the petiole to base, scrobiculate and inconspicuously punctate above, densely and prominently black punctate and punctate-lineate below, the midrib deeply impressed above, prominently raised below, the secondary veins all inconspicuous, ca. 8–10 pairs, the submarginal collecting vein inconspicuous, ca. 1 mm from margin, the margin slightly revolute throughout; petiole marginate to base, 6–7 mm long, flat above. *Staminate inflorescence:* unknown. *Pistillate inflorescence:* a sessile umbel, 3–9-flowered; peduncle obsolete to 2 mm long, ca. 1 mm diam.; floral bracts chartaceous, oblate, 1.3–1.5 mm long, 2–2.2 mm wide, apex broadly rounded, densely glandular-granulose at first, glabrescent, densely and prominently red glandular-punctate and punctate-lineate, the margin opaque, densely glandular-ciliate; pedicels cylindric, 3–5 mm long. *Pistillate flowers:* unknown. Fruiting calyx 4-merous, 0.8–1 mm long, the calyx tube ca. 0.1 mm long, the lobes ovate, 0.7–0.9 mm long, 0.5–0.7 mm wide, apex subacuminate, densely red punctate and punctate-lineate medially, the margin flat, opaque, entire, minutely glandular-ciliolate, glabrescent. *Fruit* globose, 2–3 mm long and in diam., densely and prominently red punctate and punctate-lineate, the persistent stigma ligulate, 4-winged.

Distribution.—Endemic to the Philippines, from southern Luzon Island

(Camarines Sur Province) southward through Leyte Island (Biliran Subprovince) to Mindanao Island (Davao del Sur and North Cotabato provinces), at 895–2,200 m elevation.

Ecology and conservation status.—*Myrsine mindanaensis* is a narrow endemic found from southern Luzon Island southward through Leyte to Mindanao. The species appears to be a subcanopy species on Mt. Apo, in the mid-montane forest dominated by *Lithocarpus* spp. and *Agathis philippinensis.* It is locally common in secondary growth areas on Leyte. However, no studies have shown whether *M. mindanensis* can withstand prolonged disturbance. Therefore, pending further study, I prefer to describe its conservation status as threatened.

Etymology.—The specific epithet refers to the site of original description, from the island of Mindanao.

Common names.—"Dipallá" (Bagobo language, *Ramos BS 41559*); "Tongog" (Bagobo language); "Baliyuk" (Bagobo language, Madulid 1992).

Specimens examined. **PHILIPPINES. LUZON ISLAND. Camarines Sur Prov.:** Tinambac, Mt. Isarog, Haribon Foundation, Tinambac Cawaynan access trail N to Ulag Ganabo, Balagbag Kulod facing Isarog Tilhang, Ulag and vicinity, 895–1020 m, 20 Feb 1993 (fr), *B. Hernaez & M. Cajano {CAHUP 6092, 60893, 60894}* (CAHUP). **LEYTE ISLANDS. Biliran Subprov.:** Libtong, Naval, 12 Aug 1992 (fr), *Barbon et al. PPI 8601* (A, BOG, BRIT, K, L, PNH). **Leyte Prov.:** Cabalian, Dec 1922 (fr), *M. Ramos BS 41559* (A, NY, PNH, US). **MINDANAO ISLAND. Davao del Sur Prov.:** Davao, Aug 1933 (fr), *R. Kanehira s.n.* (NY). **North Cotabato Prov.:** [Todaya] Mt. Apo, Sep 1909 (fr), *A. Elmer 11820* (A, BISH, GH, K, L, NY, PNH, US); Mt. Apo, NW slopes, along Marber River, 07°05'N, 125°14'E, 1,600 m, 23 Oct 1990 (ster.), *L. Co 3125* (A, PUH, L); Kidapawan Municipality, Mt. Apo Geothermal Project, near Lake venado, 07°10'N, 125°16'E, 1,800–2,200 m, Oct 1992 (ster.), *D. Lagunzad 916* (PUH).

Myrsine mindanensis is closely related to *M. philippinensis* but can be distinguished by its scrobiculate upper leaf surface, minutely rufous papillose branchlet apices, and minute calyx.

9. Myrsine philippinensis A. DC. in DC., Prodr. 8:94. 1844. **(Fig. 2E, F).** *Rapanea philippinensis* (A. DC.) Mez in Engler, Pflanzenr. 9 (IV. 236):364. 1902. TYPE: PHILIPPINES. LUZON ISLAND. Albay Prov.: 1841, *H. Cuming 868* (HOLOTYPE: G, n.v., fragment- A!; ISOTYPES: K-2 sheets!, L!).

Shrub or small tree to 5 m tall. *Branchlets:* terete, 2.5–3.5 mm diam., essentially glabrous. *Leaves:* buds minutely red glandular-papillate and translucent glandular-granulose, early glabrescent, the margin minutely translucent ciliate, early glabrescent; blade coriaceous, symmetric, oblanceolate or oblong, rarely elliptic, (5–)6–10(–12) cm long, 2–3(–3.8) cm wide, apically obtuse to rounded, the uppermost tip slightly emarginate, basally cuneate, decurrent on the petiole, smooth and inconspicuously pellucid punctate above, black or brown punctate and punctate-lineate below, the

midrib slightly raised above, prominently raised below, the secondary veins 13–19 pairs, not visible above, inconspicuous below, the marginal collecting vein ca. 1 mm from margin, flat, entire, and bordered by numerous prominent black punctations along the margin; petiole canaliculate and marginate, 6–8 mm long, glabrous. *Staminate inflorescence:* umbellate, 9–16-flowered; peduncle 1.5–2 mm long, 1–1.5 mm diam.; floral bracts chartaceous, ovate, 0.8–1 mm long, 0.3–0.5 mm wide, apically obtuse, prominently and densely pellucid punctate-lineate, the margin entire, glandular-ciliate; pedicels cylindric, 3.2–5.0 mm long. *Staminate flowers:* 4-merous, membranaceous, 2.6–3.6 mm long; calyx cotyliform, 1.2–1.5 mm long, the tube ca. 0.1 mm long, the lobes ovate, 1.1–1.4 mm long, 0.4–0.6 mm wide, apically obtuse, prominently black punctate near apex, erose and densely glandular ciliate along the margin; corolla 2.5–3.5 mm long, subrotate, the tube ca. 0.3 mm long, the lobes oblong, 2.2–3.2 mm long, 0.6–0.8 mm wide, apically rounded, prominently and densely black punctate and punctate-lineate, densely glandular-granulose along the margin; stamens 1.7–2 mm long, the filament adnate to corolla tube, 0.3–0.5 mm long, the anthers oblong, 1.3–1.5 mm long, apically long-apiculate, the apiculum densely glandular-barbate, basally subcordate, dehiscent at first by large subapical pores, opening into wide longitudinal slits, the connective and apiculum prominently black punctate ventrally and dorsally; pistillode conic, subglobose, ca. 0.1–0.2 mm long, 0.4–0.5 mm diam., hollow, the stigma apiculate. *Pistillate inflorescence:* like staminate but peduncle 2–4 mm long, to 1 mm diam.; pedicels 2–3 mm long, accrescent in fruit to 5 mm. *Pistillate flowers:* like staminate but 1.7–2 mm long; calyx 1.0–1.1 mm long, the tube ca. 0.2 mm long, the lobes widely ovate, ca. 0.8–0.9 mm long, 0.9–1.0 mm wide, apically rounded, the margin irregular, densely glandular-ciliate; corolla 1.7–1.9 mm long, the tube 0.1–0.2 mm long, the lobes 1.3–1.5 mm long, 0.3–0.5 mm wide; staminodes 1.3–1.5 mm long, the filaments 0.1–0.2 mm long, the antherodes lanceolate, 0.8–1 mm long, 0.2–0.4 mm wide, apically minutely apiculate, base subcordate; pistil obnapiform, 2.2–2.5 mm long; ovary globose, 1–1.2 mm long, 0.4–0.6 mm diam., the stigma ligulate, 1.4–1.6 mm long, the base stylopodic at the ovary apex, translucent, eglandular, the placenta obpyramidal to obovoid, ovules 3–5, uniseriate, exposed laterally. *Fruit* globose, 2.5–4 mm long and in diam., densely and prominently pellucid punctate and punctate-lineate.

Distribution.—Endemic to the Philippines, from southern Luzon Island (Batangas, Camarines Norte and Quezon provinces), southward through Mindoro, Sibuyan and Panay Island, then wesward to the Cuyo Island Group and eastward to Mindanao, including Sulu Island, at sea level to 305 m elevation.

Ecology and conservation status.—*Myrsine philippinensis* is very common along coastal arelike secondary vegetation, and on sands in mangrove swamps, and as such does not appear to be threatened at the present time.

Etymology.—The specific epithet refers to the distribution of this endemic species.

Common names.—*Myrsine philippinensis* has more common names than any other species in the genus, owing to its high frequency and visibility in the mangroves along coastlines. The following are common names from label data with no languages given: "Mamumboga" (Panay Islands: Guimaras Subprovince, Guimaras Island); "Hampupuyos" (Panay Islands, Iloilo Prov.); "Maga" (Luzon Island: Quezon Prov.); "Naling Saging" (Samar Island: Northern Samar Prov.: Waray). Other names (Madulid 1992): "Anumbaga" (Bisayan-Panay dialect); "Go-od go-od" (Tagalog language); "Gurimomo" (Ibanag language); "Hanigad" (Bisayan-Cebuano dialect); "Kalumanay" (Tagalog language); "Lipote" (Bukidnon-Binukid Manobo dialect- probably from vicinity of Cagayan de Oro); "Luklukso" (Ibanag language); "Maga, Magaspang" (Bisayan-Panay dialect- probably mistaken and refers to *Myrsine densiflora*); "Malatukba" (Batangan, Mangyan dialect); "Marupig" (Negrito language); "Supak" (Igorot language); "Supek" (Kankanay language).

Specimens examined: **PHILIPPINES. LUZON ISLAND. Batangas Prov.:** 1841 (pist. fl), *H. Cuming 1601* (A, K). **Camarines Norte Prov.:** Paracale, Nov 1884 (fr), *S. Vidal 1516* (K, L). **Quezon Prov.:** Polillo Island, Bo. Lube, sea level, Jun 1946 (bisex. and pist. fl), *F. Salvoza 1057 (PNH 3715)* (A, L); Real, Lalawinan, Tipuan, NBG, 4 Sep 1991 (fr), *Barbon et al. PPI 2267* (A, BRIT, PNH); Infanta, 3 m, 5 Aug 1959 (stam. fl), *L. Orantia LBC 3481* (LBC); Tagkawayan, sea level, 20 Mar 1951 (stam. fl), *S. Jacoban 20 {LBC 966}* (LBC), 6 Jan 1951(stam. fl), *E. Agaceta 6 {LBC 917}* (LBC); Calauag Bay, Caluag Municipality, near sea level, Mar 1990 (stam. fl), *D. Lagunzad 758* (PUH). **MINDORO ISLAND. Mindoro Oriental Prov.:** Baco, Jan 1903 (pist. fl), *E. Merrill 1206* (K, NY). **SIBUYAN ISLAND. Prov. Romblon:** Magallanes (Mt. Guiting-guiting), along Pauala River, 305 m, Apr 1910 (pist. fl), *A. Elmer 12295* (A, BISH, GH, K, L, NY, PNH, US). **CUYO ISLAND GROUP: Palawan Prov.:** Pamalican Island, Hill 38, summit area, 11°21'N, 120°43.6'E, <50 m, 5 Apr 1990 (ster.) *L. Co. 3073* (PUH). **PANAY ISLAND. Guimaras Subprov.:** Guimaras Island, Mar. 1808 (ster.), *S. Vidal 3183* (K), Jan 1904 (ster.), *J. Gammill FB 272* (K, NY, PNH, US), Jan 1904 (stam. fl), *J. Gammill FB 276* (K, NY, PNH, US), Feb 1904 (fr), *J. Gammill FB 301* (K, NY, PNH), Feb–Mar 1950 (fr), *M. Sulit 3630 {PNH 11769}* (A, K, L, PNH, US), (fr), *M. Sulit 11800* (L, PNH, US), Gimaras, *s.d.* (Bud), *S. Vidal 3156, 3183* (A). **LEYTE ISLAND. Leyte Prov.:** 19 Jun 1915 (pist. fl), *C. A. Wenzel 1368* (A). **SAMAR ISLAND. Samar Norte Prov.:** Capul Island, 27 Mar 1957(ster.), *Y. Kondo & G. Edaño 113 {PNH 36799, 36817}* (BISH, PNH); Tarangan, sea level, s.d. (stam. fl), *E. Rodulfa EVR–7 {LBC 3792}* (LBC). **MINDANAO ISLAND. Surigao Prov.:** Jun 1919 (fr), *M. Ramos & J. Pasgasio BS 34755* (K, PNH). **JOLO [SULU] ISLAND.** Samales Group: ARMM, 15 Oct 1915 (stam. fl), *M. S. Clemens 9332* (A, L).

Myrsine philippinensis belongs to a complex of species including *M. umbellulata* (Wallich) A. DC., *M. sumatrana* Miquel, *M. cochinchinensis* A. DC., *M. korthalsii* Miquel, and *M. rawacensis* A. DC. Field studies of popu-

lation biology and intrapopulational variation will be necessary to determine if the quantitative differences in pedicel length, floral number, and leaf reticulation provide useful characters upon which taxa may be consistently separated. These highly variable quantitative characters, combined with differences attributable to sex expression (staminate, pistillate, bisexual) may account for the proliferation of names in this group. In particular, there appears to be only minor petal ornamentation differences which tentatively separate *Myrsine philippinensis* from *M. cochinchinensis*. It is hoped that current studies underway across the entire Malesia Floristic Province will remedy the current taxonomic chaos.

In the Philippines, *Myrsine philippinensis* may be superficially confused with *M. mindanensis*, but is easily recognized by its glabrous branchlets, longer calyx and mangrove habitat. It is probably most often confused with *M. densiflora*, from which it is distinguished by the extremely small, globose fruit, more robust, longer pedicels, more numerously-flowered inflorescences, and much longer calyx.

10. **Myrsine avenis** (Blume) A. DC., Trans. Linn. Soc., Bot. 17:107. 1834. **(Fig. 2H, I).** *Ardisia avenis* Blume, Bijdr. 691. 1825. *Rapanea avenis* (Blume) Mez in Engler, Pflanzenr. 9(IV. 236):357. 1902. TYPE: INDONESIA. JAVA: *sine loc. esp.* (fr), *H. Zollinger 883* (HOLOTYPE: L, n.v.; ISOTYPES: A!, K!).

Tree to 8 m tall. *Branchlets:* angulate, 3–5 mm diam., densely rufous tomentose at first, glabrescent. *Leaves:* buds densely rufous tomentose and with minute rufous sessile scales, the margins densely rufous-ciliate, glabrescent; blade coriaceous, symmetric, elliptic to oblong, rarely narrowly oblanceolate, (3.8–)4–7(–9.5) cm long, (1.0–)2–3(–4) mm wide, apically sharply acute, with a small emargination at tip, basally obtuse to rounded, not decurrent on the petiole, dull but prominently pellucid punctate above, densely and prominently pellucid punctate below, bearing minute rufous sessile scales when young, glabrescent, midrib immersed above, to base of petiole, prominently raised below, the secondary veins not visible above or below, entire and subrevolute, especially basally, along the margin; petiole marginate, 10–15 mm long, glabrous. *Staminate inflorescence:* subsessile, the peduncle 1–2 mm long, ca. 1 mm diam.; floral bracts chartaceous, ovate to suborbicular, 0.8–1 mm long, 0.6–0.8 mm wide, apically obtuse, densely and prominently black punctate, the margin glandular-ciliate; pedicels cylindric, (2–) 3–11 mm long. *Staminate flowers:* 4-merous, chartaceous, 1.5–1.8 mm long; calyx cupuliform, 1–1.2 mm long, the tube ca. 0.2 mm, the lobes ovate, 0.8–1 mm long, 0.7–0.9 mm wide, apically obtuse, prominently red punctate-lineate medially, entire, densely and prominently red punctate and sparingly glandular-ciliolate along the margin; corolla campanulate, 2.3–2.5 mm long, the tube ca. 0.2 mm long, the lobes asym-

metrical, oblong, 2–2.3 mm long, 1–1.3 mm wide, apically obtuse to rounded, densely and prominently red punctate and punctate-lineate medially, densely red punctate and glandular-granulose along the margin; stamens 2–2.2 mm long, the filaments adnate to the corolla tube 0.2–0.3 mm long, the anthers ovate, 1.8–1.9 mm long, 1.2–1.5 mm wide, apically acute, almost apiculate, basally cordulate, the apiculum and connective darkened; pistillode conic, ca. 1 mm long and wide, hollow. *Pistillate inflorescence:* as in staminate but 10–15-flowered; peduncle 2.5–3 mm long, 1–1.5 mm diam.; floral bracts suborbicular, 1–1.2 mm long and wide, apically widely rounded, the margin glandular ciliolate; pedicels 1.5–3 mm long. *Pistillate flowers:* like staminate but calyx 1–1.3 mm long, the tube ca. 0.3 mm long, the lobes widely ovate, 0.8–1 mm long, 0.8–1 mm wide, apically obtuse; corolla 2.3–2.5 mm long, the tube ca. 0.3 mm long, the lobes oblong, 2–2.2 mm long, 0.8–1 mm wide, apically rounded, densely and prominently red punctate and punctate-lineate medially, punctate and glandular-granulose along the margin; staminodes 2 mm long, the filament fused to the corolla tube 0.3 mm long, the antherodes ovate, 0.5–0.7 mm long and wide, the apically acute, slightly apiculate, non functional, basally deeply cordate, the connective darkened apically and on filament back; pistil tetragonal in cross-section, 1.2–1.6 mm long; ca. 0.8–1 mm diam., densely black punctate-lineate, the stigma 4-lobed, the lobes perpendicular, ca. 0.2 mm long, the placenta ovoid, the ovules 4, in one series. *Fruit* globose, 1.5–2.5 mm long and in diam, red when fresh, densely and prominently orange and pellucid punctate, the persistent stigma base appearing stylopodic.

Distribution.—Myrsine avenis is found from northern Luzon Island south through Mindoro to Negro and finally, Mindanao Island.Outside of the Philippines, it is known from Brunei, Sabah, Sarawak, Java, Sumatra, Buru, East and West Kalimantan, and Sulawesi, at 862 –3,000 m elevation.

Ecology and conservation status.—Myrsine avenis is most frequently found on windswept ridgetops in forests dominated by Ericaceae and Podocarpaceae, in forests termed "mossy forest," "montane forest" or "upper submontane forest." The climate is extremely hostile and there is precious little commercially valuable timber on these sites. However, with increasing demands for telecommunication installations on the tops of many mountains throughout Malesia, this species may be considered threatened.

Etymology.—The specific epithet, 'avenis' refers to the secondary veins, not readily visible from either the abaxial or adaxial side of the leaf.

Common names.—"Berig" (Bisayan, Panay dialect, Madulid 1992); "Paspas" (Bukidnon, Binukid Manobo dialect, probably from the northern portion of the Kitanglad Mountain Range, Madulid 1992).

Specimens examined: **PHILIPPINES. LUZON ISLAND. Baatan Prov.:** Lamao River, Mt. Mariveles, May 1905 (stam. fl), *R. Meyer 3114* (K, PNH). **Benguet Prov.:** Mt. Pulogloco, Sep 1921 (pist. fl, fr), *M. Ramos & G. Edaño BS 40394* (US); Mount Santo Tomas, 26 Mar 1935 (fr), *M. S. Clemens 51876* (A, MICH), Mar 1904 (stam. fl), *A. Elmer 5811* (A, K, PNH, US), Jun 1904 (fr), *A. Elmer 6539* (K, PNH, US), 3 Dec 1953 (fr), *E. Walker 7546* (US), 28 Oct 1904 (pist. fl, fr), *R. Williams 1346* (GH, K, NY, US); Mar 1907 (fr), *A. Elmer 8745* (L, NY, US); *sine loc. esp.*, Mar 1916 (fr), *C. Garcia 25507* (US); Baguio and vicinity, May 1911 (bisex. & pist. fl), *C. B. Robinson BS 14088* (K, L, PNH, US), Mar [1907]1913 (fr), *A. Elmer 14286* (BISH, GH, K, L, NY, US); Mt. Tonglon, Bagio, Dec 1908 (fr), *M. Merritt FB 14153* (US). **Camarines Norte Prov.:** Vicinity of Paracale [probably near Parang], *s.d.* (fr), *S. Vidal 1526* (L); **Camarines Sur Prov.:** Tinambak, Haribon Foundation for the Conservation of Natural Resources, Luzon, Mt. Isarog National Park, Tinambac Cawayan access trail N to Ulag Ganabo, Balagbag Kulod facing Isarog Tilhang. Ulag and vicinity, 895–2,000 m, 20 Feb 1993 (pist. fl bud), *B. Hernaez & M. Cajano CAHUP 60019* (CAHUP), Balagbag Kulod facing Isarog Tilhang Trail to Kabagtuan, Gapugapuan and vicinity, 895–1065 m, 22 Feb 1993 (pist. fl bud), *Hernaez & M. Cajano CAHUP 60020* (CAHUP). **Ilocos Norte Prov.:** Mt. Palimlim, *M. Ramos BS 33285* (NY). **Laguna Prov.:** Mt. Banahao [Banajao, ca. 14°04'N, 121°29'E], Jan 1913 (fr), *M. Ramos BS 19576* (US), Apr 1925 (fr), *M. Sulit BS 30073* (NY); Los Baños, Mt. Makiling, Mar 1906 (ster), *A. Loher 6140*, Jun–Jul 1917 (ster), *A. Elmer 17815* (A, K, L, NY, PNH, US), (fr), *A. Elmer 18270* (A, BISH, K, L, NY, PNH, US), 21 Jul 1964 (stam. fl), *J. Hernaez 867 {CAHUP 18393}* (CAHUP); Peak 2, 1060 m, 10 Jun 1966 (stam. fl), *B. Hernaez 867 {CAHUP 58864, 58865, 58866}* (CAHUP), 10 Jun 1966 (stam. fl), *N. Orlido CAHUP 17927* (CAHUP), summit, Mt. Makiling, 1,100 m, 18 Jan 1913 (fr), *F. Gates 5196* (CAHUP, UC); Mt. Maquiling, Mar 1913 (fr), *Forestry School. UP Los Baños FB 20145* (US). **Laguna/Quezon Prov. border:** Mt. Banaho, *s.d.* (fr), *S. Vidal 1516bis* (A). **Rizal Prov.:** Mt. Susong-Dalaga, Aug 1917 (fr), *M. Ramos & G. Edaño BS 29282* (A, K, US); Montalban, Sep 1909 (stam. fl), *A. Loher 12009* (A), (fr), *A. Loher 12038* (A); Sumag, Apr 1914 (stam. fl), *A. Loher 14097* (A); *sine loc. esp.* May 1907 (fr), *M. Ramos BS 2650* (BISH, US). **Quezon Prov. [Tabayas]:** Dec 1993 (fr), *A. Loher 3830*; (K, PNH, US); Banahao, Feb 1906 (ster.), *A. Loher. 6125* (K, PNH), *s.d.* (fr), *Vidal 1516* (A, PNH); Lucuban, 1,829 m May 1907 (fr), *A. Elmer 9351, 9352* (A, K, L, NY, PNH, US). **Mountain Prov.:** Bayninan, Banaue, Ifugao, 1,219 m, 26 Mar 1963 (pist. fl, fr), *H. C. Conklin & Buwaya I-1023 {PNH 79612}* (K, L, PNH). **MINDORO ISLAND. Oriental Mindoro Prov.:** Mt. Halcon, 862 m, 16 Feb 1948 (fr), *G. Edaño 192 (PNH 3574)* (A, L); Mt. Yagaw, S slopes, 400 m, 30 Sep 1953 (ster.), *H. Conklin 529 {PNH 18989}* (L), Mt. Yagaw, E slope, SE slope, 330 m, 28 Dec 1953 (ster), *H. Conklin 864{PNH 19321}* (L, PNH). **NEGROS ISLAND. Negros Occidental Prov.:** SW face of Mt. Canlaon near summit crater, above Guintubdan, 31 Mar 1992 (fr), *B. Stone et al. PPI6471* (A, BRIT, PNH), Apr 1910 (fr), *E. Merrill BS 6998* (US). **MINDANAO ISLAND. North Cotabato Prov.:** Todaya, Mt. Apo, 1905 (fr), *R. Williams 2603* (A).

Myrsine avenis belongs to a complex of perhaps 15 taxa, within which *Myrsine affinis* A. DC. is the name most often misapplied to it. It is probably most closely related to *Myrsine capitellata* Wallich (*non alior*), differing in much longer pedicels, greater numbers of flowers per inflorescence, and the pubescent branchlet apices.

In the Philippines, *Myrsine avenis* was frequently labelled "*Myrsine philippinensis*" by such workers as Elmer, Loher, and even Merrill on occasion. This led to much confusion as later collections were apparently matched

to those determined by these prodigious students of the Philippine flora. However, *Myrsine avenis* resembles *M. philippinensis* only in the highly visible pedicels. In addition to the pubescent branchlets of *M. avenis*, it is restricted to upper montane habitats, while *M. philippinesis* is strictly a mangrove species.

11. **Myrsine penibukana** (Philipson) Pipoly, comb. nov. **(Fig. 3I).** *Rapanea penibukana* Philipson, London J. Bot. 78:105. 1939. TYPE: MALAYSIA. SABAH [BRITISH NORTH BORNEO]: Mount Kinabaulu: Penibukan, flat place on ridge at 1,219 m., 18 Oct 1933 (stam. fl), *J. & M. Clemens 20764* (HOLOTYPE: BM, n.v.; ISOTYPES: A*!; K!, NY*!). *The sheets at A and NY bear the number *J. & M. Clemens 40764*, written in pencil at the bottom of the label, but the A sheet was annotated by Philipson before publication of the species. Given that the number was not included by him as a paratype along with the other collections, and that there are several other data stricken out and partially corrected on the label, it is assumed that the A and NY sheets' number is a typographical error and that they are, isotypes.

Tree to 20 m tall. *Branchlets:* terete, 2.5–3 mm diam., sparsely ferrugineous glandular-granulose, glabrescent. *Leaves:* buds minutely and sparsely ferrugineous glandular-granulose, glabrescent, the margins rufous glandular-ciliate; blades thinly coriaceous, symmetric, oblanceolate, elliptic or obovate, (3.5–)7–10 cm long, (2.2–)2.5–4 cm wide, apically obtuse, basally acute, decurrent on the petiole to base, subnitid and conspicously but not prominently pellucid punctate above, pallid and conspicuously black punctate-lineate below except prominently black punctate between submarginal vein and margin, the midrib impressed above, prominently raised below, the secondary veins inconspicuous on both sides, 9–12 pairs, the submarginal collecting vein ca. 0.5 mm from margin, marginally flat and entire; petiole marginate, flat above, 6–8 mm long, glabrous. *Staminate inflorescence:* fasciculate; peduncles forming "short shoots" (3.5–)4–12.5 mm long, 1–2.5 mm diam.; floral bracts coriaceous, oblate, 0.5–0.7 mm long, 1–1.2 mm wide, apically broadly rounded, medially prominently pellucid punctate, with hyaline, scarious, erose-fimbriate, and long white glandular-ciliolate margin; pedicels obsolete to cylindric and 0.5(–0.7) mm long. *Staminate flowers:* 5-merous, chartaceous, 2.8–3 mm long; calyx cupuliform, 1.3–1.6 mm long, the tube ca. 0.1 mm, the lobes ovate or oblong, 1.2–1.5 mm long, 0.5–0.7 mm wide, apically obtuse to acutish, densely pellucid to orange punctate and punctate-lineate medially, irregular, entire, and glandular-ciliate along the margin; corolla campanulate, 2.8–3 mm long, the tube 0.5–0.7 mm long, the lobes elliptic to oblong, 2.3–2.5 mm long, 0.7–1.0 mm wide, apically obtuse, cucullate, densely and prominently pellucid punctate-lineate medially, prominently red punctate along entire margin, glandular-granulose within and on margin, the margin entire; stamens 1.8–2 mm long, the filaments completely fused to corolla tube, ca.

0.5 mm long, the anthers ovoid, 1.3–1.5 mm long,1 mm wide, apex apiculate, base cordate, the connective prominently red punctate-lineate; pistillode vestigial, conical and hollow, ca. 0.5 mm long, or absent. *Pistillate inflorescence:* unknown. *Fruit* subglobose, 4.5–5 mm long, 3.8–4 mm diam., densely and prominently pellucid punctate-lineate.

Distribution.—Known only from the type locality, Mt. Kinabalu, Sabah, and Luzon Island, in Abra, Quezon and Rizal provinces, Philippines, at 1,000–1,200 m.

Ecology and conservation status.—*Myrsine penibukana* is a highly restricted species new to the flora of the Philippines. At this time, nothing is known of its ecology or its conservation status.

Etymology.—The specific epithet refers to the type locality, Mt. Penibukan, a part of the Mt. Kinabalu Range, in northen Sabah, on the island of Borneo, Malaysia.

Common names.—While no common names have been reported for this taxon *per se*, it is expected that "Tongog" (Bisayan-Panay dialect, and Bagobo languages) would be used for this taxon, as for all members of the genus *Myrsine*.

Specimens examined: **PHILIPPINES. LUZON ISLAND. Abra Prov.:** Mt. Posuey, Feb 1927 (fr), *M. Ramos BS 20710* (A). **Rizal Prov.:** Jan 1913 (stam. fl), *A. Loher 13871* (A), Feb 1913 (stam. fl), *A. Loher 14221* (A), (stam. fl), *A. Loher 14230* (A); sine loc. esp., May 1907 (fr), *M. Ramos BS 2640* (L). **Quezon Prov.[Tabayas]:** Mt. Dingalan, Aug–Sep 1916 (fr), *M. Ramos & G. Edaño BS 26612* (US). **MALAYSIA. SABAH [BRITISH NORTH BORNEO]:** Mt. Kinabalu, Penibukan, 16 Jan 1933 (stam fl), *J & M. S. Clemens 31119* (A, BM). 8 Nov 1933 (stam. fl bud), *J & M. S. Clemens 50295* (A, BM, NY).

Myrsine penibukana is a new record for the Philippines. Within the country, it can be confused with *M. fastigiata*. However, the erose-fimbriate floral bract margins with long white glandular cilia, the much longer short shoots, corolla lobes with red punctations along the margins and pellucid punctate-lineations medially, and red punctate-lineate anther connective of *M. penibukana* clearly distinguish it from *M. fastigiata*.

Myrsine penibukana is most closely related to another Sabah species, described by Merrill as *Rapanea multibracteata*. However, because I recognize all species of *Rapanea* as members of *Myrsine*, the following combination is necessitated:

11a. **Myrsine multibracteata** (Merrill) Pipoly, comb. nov. *Rapanea multibracteata* Merrill, J. Asia Soc. Malay 1:24. 1923. TYPE: MALAYSIA. SABAH [BRITISH NORTH BORNEO]. Sandakan, Jan 1921 (stam. fl), *M. Ramos 1345* (HOLOTYPE: BM, n.v.; ISOTYPES: A* !, K!). *The isotype at A bears the number *"Ramos 1354"* instead of *"Ramos 1345"* as cited in the protologue. However, because it is an obviously retyped label, it is most likely that this represents a true isotype.

Myrsine multibracteata is most closely related to *M. penibukana*, because of the long, multibracteate short flowering shoots, the coriaceous, glandular-ciliate, and oblate floral bracts, 5-merous flowers with ovate to oblong calyx lobes, elliptic to oblong corolla lobes, and the coriaceous leaves. However, they may easily be distinguished by the following key:

1. Leaf buds and branchlets ferrugineous glandular-granulose; leaf blades thinly coriaceous, nitid above, conspicuously black punctate-lineate below; calyx 1.3–1.6 mm long, the lobes 1.2–1.5 mm long, 0.5–0.7 mm wide, densely pellucid to orange punctate and punctate-lineate medially, the margin irregular, entire, glandular-ciliate; corolla chartaceous, 2.8–3 mm long, the lobes cucullate, densely and prominently pellucid punctate-lineate medially, prominently red punctate; plants of montane forests ..... **11. M. penibukana**

1. Leaf buds and branchlets rubiginous glandular-papillate; leaf blades thickly coriaceous to cartilaginous, sordid above, densely and prominently pellucid and red punctate and punctate-lineate below; calyx 0.8–1.0 mm long, the lobes 0.6–0.8 mm long, 0.3–0.4 mm wide, sparsely pellucid punctate medially, the margin entire, glabrous; corolla membranaceous, 1.5–2 mm long, the lobes flat, sparsely pellucid punctate-lineate; plants of mangrove swamps ..... **11a. M. multibracteata**

At this writing, *M. multibracteata* has not been found in the Philippines. It is a characteristic element of the mangrove vegetation of Sabah.

12. Myrsine fastigiata (Elmer) Pipoly, comb. nov. **(Fig. 3E, H).** *Rapanea fastigiata* Elmer, Leafl. Philipp. Bot. 2:670. 1910. TYPE: PHILIPPINES. MINDANAO ISLAND. North Cotabato Prov.: [Todaya], Mt. Apo, 2000 m, Aug 1909 (stam. fl), *A. Elmer 11447* (HOLOTYPE: PNH, destroyed; LECTOTYPE, here designated, GH!; ISOLECTOTYPES: A !, K, L, NY!).

Tree to 8 m tall. *Branchlets:* angulate, 2.5–4 mm diam., densely rufous papillose-tomentose, glabrescent. *Leaves:* buds densely rufous papillose tomentose, especially on adaxial petiole surface, the bud margin densely rufous ciliolate; blades coriaceous, symmetric, elliptic, oblong or rarely oblanceolate, (3–)6–7(–9) cm long, (1.5–)2–2.5 cm wide, apically acute to acuminate, the acumen with an obtuse tip, basally cuneate, decurrent on the petiole, nitid and smooth above, scrobiculate with obscure black punctations and punctate-lineations below, midrib immersed above, prominently raised below, the secondary veins 15–20, prominulous above and below (with magnification), the submarginal collecting vein ca. 1 mm from margin, with the margin entire, revolute; petiole marginate, 5–8 mm long, almost flat above, glabrous at maturity. *Staminate inflorescence:* fasciculate, 4–9-flowered; peduncle 3.5–4.0 mm long, 1–2.5 mm diam.; floral bracts chartaceous, widely ovate to suborbicular, 2.0–2.5 mm long and wide, apically broadly rounded, cucullate, densely and prominently black punctate and punctate-lineate medially, the margin scarious, hyaline, densely

rufous glandular-ciliolate, entire; pedicels obsolete or cylindric to 2 mm long. *Staminate flowers:* pale green; 5–6-merous, chartaceous, 2.8–3.3 mm long; calyx cotyliform, 1–1.5 mm long, the tube 0.3–0.5 mm long, the lobes ovate to suborbicular, 0.7–1.0 mm long, 0.7–1.0 mm wide, apically rounded to obtuse, densely and prominently black punctate medially, the hyaline, erose apically, and densely glandular-ciliolate; corolla subrotate, 2.5–3 mm long, the tube 0.8–1.0 mm long, the lobes narrowly ovate, 2–2.2 mm long, 0.8–1.3 mm wide, apically subacuminate, glabrous, densely and prominently black punctate and punctate-lineate medially, with the margin entire, densely glandular-ciliate throughout its length; stamens 2.2–2.5 mm long, the filaments 1.3–1.5 mm long, basally fused to the corolla tube ca. 1 mm, the apically free portion ca. 0.5 mm, the anther ovate, 0.8–1 mm long, 0.3–0.5 mm wide, the apex apiculate, the base cordate, dehiscent by introrse, wide longitudinal slits, the connective epunctate; pistillode conic, ca. 1 mm long, 0.5 mm wide, hollow, the stigma and style not differentiated. *Bisexual flowers:* like staminate but 2.5–3 mm long, calyx 1.2–1.4 mm long, the tube ca. 0.2 mm long, the lobes subdeltate 1–1.2 mm long and wide; corolla 3–3.5 mm long, the tube ca. 0.5 mm long, the lobes narrowly ovate to lanceolate, 2.5–3 mm long, 1.3–1.5 mm wide; stamens 2.2–2.5 mm long, the filaments 0.5 mm long, entirely fused to corolla tube, the anthers oblong to ovate, 1.8–2 mm long, 0.4–0.6 mm wide; pistil subglobose, slightly costate, 1.3–1.6 mm long, 0.8–1.3 mm diam., the placenta globse, apically apiculate, ovules 3, deeply immersed in placenta, stigma conical, with a stylopodic base, slightly lobed. *Pistillate flowers:* like staminate but 3–3.5 mm long; calyx 1.3–1.5 mm long, the tube 0.2–0.3 mm long, the lobes widely ovate, 1.1–1.3 mm long and wide; corolla 3–3.5 mm long, the tube 0.3–0.5 mm long, the lobes ovate, 2.5–3 mm long, 0.8–1 mm wide, apically somewhat acuminate; staminodes 2.3–2.5 mm long, the filaments 0.5 mm long, entirely fused to corolla tube, the antherodes lanceolate, 1–1.5 mm long, the apically acute, basally sagittate, without pollen; pistil 2.3–2.5 mm long, the ovary subglobose, 2.2–2.3 mm long and diam., the stigma conic, with a stylopodic base, slightly 4-lobed, the placenta subglobose, the ovules 6, inserted and exposed in one series near placenta. *Fruit* subglobose, 2.5–3 mm long and in diam., prominently orange punctate and punctate-lineate.

Distribution.—Endemic to the Philippines, from the Mountain Province of Luzon southward through Camarines and Leyte to Bukidnon Province of Mindanao, at 2,000–2,500 m elevation

Ecology and conservation status.—*Myrsine fastigiata* is a conspicuous element of short, dense stands of upper montane moist forests. These few remaining forests are found on a very limited number of mountains in the country, and therefore, the species is considered endangered.

Etymology.—The epithet 'fastigiata' refers to the clustered, erect branches of the tree. This is more accurately described by its architectural model, "Rauh's Model " (*sensu* Halle et al. 1978). Trees exhibiting Rauh's Model are characterized by their rhythmically growing, readily distinguishable trunks, which develop tiers of branches morphogenetically identical to those trunks. All branches are orthotropic and monopodial, with lateral ("axillary") inflorescences that do not affect shoot development. In *Myrsine*, like other Myrsinaceae, branching is sylleptic, easily recognized by the absence of basal bud-scales and by the elongate hypopodium. Therefore, given room to grow freely, and without experiencing reiteration phenomena, all species of *Myrsine* could indeed appear "fastigiate" in the sense the term is used here.

Common names.—"Supak" (Igorot). Because this species has heretofore been confused with *Myrsine avenis*, it is probable that other names, such as "Berig" (Bisayan-Panay dialect) and "Paspas" (Bukidnon-Binukid Manobo dialect) will also apply to it.

Specimens examined. LUZON ISLAND. **Bataan Prov.:** Mt. Mariveles, upper Lamao River, 1,060 m, 23 Mar 1904 (fr), *R. Williams 750* (NY, US), Mar 1905 (bud), *E. Merrill BS 3954* (NY, US). **Benguet Prov.:** Atok Municipality, Mt. Pauai, Apr–Jun 1918 (bisex. fl), *J. Santos BS 31782* (A, K, PNH, US), (pist. fl, fr), *J. Santos BS 31995* (A, K, PNH, US); Mt. Paua, 2,380 m, 15 Apr 1994 (fr), *L. Co 4135* (BRIT, CAHUP, PUH), "Heights in the Oaks," 2,134 m, Jul 1907 (fr), *E. A. Mearns 4270* (L); *sine loc. esp.* Dec 1926 (fr), *M. Clemens 17218* (NY);. Baguio, Mar 1907 (fr), *A. Elmer 8597* (A, K, US), (fr), *A. Elmer 8807* (A, K, L, US); Mt. Santo Tomas, beyond jeep track, 1 Jul 1958 (pist. fl, fr), *J. Sinclair & G. Edaño 9800* (L, PNH, SING); Mt. Singakalsa, Mar 1931 (fr), *E. Quisumbing & M. Sulit BS 82441* (A). **Camarines del Sur Prov.:** Paracale, *s.d.* (fr), *S. Vidal 1525"A"* (A). **Mountain Prov. [Bontoc]:** *s.d.*, (fr), *S. Vidal 1525* (K); Mt. Catua, Bontoc, Mar 1920 (bisex. fl), *M. Ramos & G. Edaño BS 37982* (A, L, US); Mt. Pulog, 10 Mar 1961 (stam. fl), *M. Steiner 1921* (L), Mt. Pulog, 16°36'N, 120°54'E, 2,350–2,450 m, 22 Jan 1968 (pist. fl, fr), *M. Jacobs 7039* (A, K, L, LBC, PNH); W slopes of Mt. Pulog, Mar 1948 (bisexual fl), *M. Celestino et al. 0–268 (PNH 4330)* (A); Mt. Pulog, Jan 1909 (bud), *H. Curran et al. FB 18038* (US), (pist. fl), *H. Curran et al. FB 18139* (BISH); Mt. Nañgaoto, Km 62 below rod, 2,500 m, 3 Feb 1948 (stam. fl), *M. Sulit 2343 (PNH 7687)* (A); 2,400 m, 24 Jan 1948 (stam. fl), *M. Sulit 2197 (PNH 7485), (*A, L); Mt. Tabayoc, 16°42'N, 120°53'E, 2,240 m, 18 Feb 1968 (pist. fl, fr), *M. Jacobs 7532* (A, K, L, LBC PNH), 2,000–2,100 m, 19 Feb 1968 (stam. fl), *M. Jacobs 7564* (A, K, L, LBC, PNH). **Ifugao Prov.:** Mt. Polis, Feb 1913 (stam. fl), *R. M^c Gregor BS 19646,* (K, L, PNH, US), *BS 19833* (K, L, PNH, US), Mt. Polis, 16°59.2'N, 121°02.4'E, 1,880 m, 18 Apr 1993 (ster.), *L. Co 3812* (A, CAHUP, CANB, K, L, PUH, US). **Zambales Prov.:** Santa Cruz, *S. Vidal 1517* (A, L). LEYTE ISLAND. **Leyte Prov.:** Mt. Suiro, N slope, 900 m, 5 May 1954 (fr), *M. Sulit 5450* [*PNH 21617* (L, PNH). MINDANAO ISLAND. **Bukidnon Prov.:** Mt. Lipa, Jun–Jul 1920 (fr), *M. Ramos & G. Edaño BS 38494* (K, PNH, US).

Myrsine fastigiata was placed into synonymy under *Myrsine avenis* by Merrill (1923), but can be separated from it by the tomentum of the branchlets (rufous papillose-tomentose vs. rufous tomentose with rufous sessile scales), longer petioles, subsessile, fasciculate inflorescences, and much

shorter pedicels. Its habitat is similar to that of *Myrsine avenis* but label data imply that *M. fastigiata* occurs in more sheltered thickets of those forests.

13. **Myrsine aralioides** (Philipson) Pipoly, comb. nov. (**Fig. 3A, B**). *Rapanea aralioides* Philipson, London J. Bot. 78:104. 1939. TYPE: MALAYSIA. SABAH [BRITISH NORTH BORNEO]. Mount Kinabalu, Penibukan, at head of the divide of Dahombong Creek, at 1,524 M, 11 Oct 1933 (pist. fl, fr), *J. & M. S. Clemens 40664* (HOLOTYPE: BM, n.v.; ISOTYPES: A!, K!, L!, NY!).

Tree to 7 m tall. *Branchlets:* terete, 7–10 mm diam., drying sulcate, sparsely covered with minute translucent or rubiginous glandular lepidote scales, glabrescent. *Leaves:* buds densely covered by minute translucent or rubiginous glandular lepidote scales, the margin sparsely rubiginous glandular ciliate basally, glabrescent; blades cartilaginous to thickly coriaceous, symmetric, elliptic to oblanceolate or obovate, 8.5–15(–21) cm long, 3.5–5(–8.5) cm wide, apically obtuse, rounded or acutish to an obtuse tip, basally rounded and often abruptly tapering, decurrent on the petiole to base, prominently punctate and scrobiculate and subnitid above, densely and prominently red punctate and black lineate-punctate below, the midrib prominently raised above and below, the secondary veins 20–25 pairs, the submarginal collecting vein inconspicuous, ca. 1.5 mm from margin, the margin entire, revolute; petiole amply marginate and canaliculate, 5–10 mm long, glabrous at maturity. *Staminate inflorescence:* unknown. *Bisexual inflorescence:* a 6–9-flowered umbel; peduncle 3.5–5 mm long, (3–)3.5–4 mm diam.; floral bracts coriaceous, oblate, 1.2–1.5 mm long, 1.5–2 mm wide, apically acute, cucullate, inconspicuously pellucid punctate, the margin entire, densely villous-glandular-ciliate; pedicels cylindrical, 2.6–4 mm long. *Bisexual flowers:* 5-merous, 3.3–3.5 mm long; calyx cotyliform, 1.5–2 mm long, the tube to 0.5 mm, the lobes deltate, 1–1.5 mm long, 1–1.4 mm wide, apically acute, medially transversely rugose, densely and prominently black punctate marginally and black punctate-lineate medially, the effect rendering the lobe verruculose, the margin entire, glandular-ciliolate; corolla 3.3–3.5 mm long, the tube ca. 0.2 mm long, the lobes elliptic, 3.1–3.3 mm long, 1–1.2 mm wide, apically acute, densely black punctate-lineate apically and toward the margin, densely glandular-granulose apically within and on the margin eitself without; stamens 2.5–2.7 mm long, the filament ca. 0.2 mm long, the anther lanceolate, 2.3–2.5 mm long, ca. 1 mm wide, apically acute, basally deeply cordate, the connective sparsely and minutely but prominently black punctate; pistil obconic, 1–1.4 mm long, the ovary ca. 1 mm long, the style and sigma morchelliform, ca. 0.3 mm long, the ovules 2–3, uniseriate. *Fruit* globose, 3–5 mm long and in diam., densely and prominently red punctate. *Pistillate inflorescence:* a 12–15-flowered umbel; peduncle a "short shoot" 8–10

mm long, 2–3 mm diam.; pedicels 2.6–4.0 mm long; floral bracts chartaceous, ovate, 1.5–1.7 mm long, 0.6–0.8 mm wide, apically acute, densely and prominently punctate medially, the margin entire, densely glandular-ciliate. *Pistillate flowers:* 5–6-merous, like bisexual but calyx 1.3–1.5 mm long, the tube ca. 0.2 mm long, the lobes ovate, 1.1–1.3 mm long, 0.6–0.8 mm wide; corolla 2.2–2.5 mm long, the tube 0.3 mm long, the lobes 2.1–2.2 mm long; staminodes resembling stamens but reduced in size, 1.2–1.4 mm long, the filaments entirely adnate to the corolla tube, ca. 0.3 mm long, the apical free portion ca. 0.1 mm long, the antherodes 0.6–0.8 mm long, 0.3–0.4 mm wide, apically acute, devoid of pollen; pistil conic, 2–2.2 mm long, the ovary ovoid 1–1.2 mm long, 0.8–1 mm diam., the stigma translucent, carnose, 4-lobed, the placenta depressed-globose, ovules 4–6, immersed in the placenta. *Fruit* like bisexual fruit.

Distribution.—In the Philippines, *Myrsine aralioides* is known only from the Island of Mindanao (Surigao del Norte Province) and the Island of Palawan, Palawan Province, at 150–200 m elevation. Outside the Philippines, the species is well known from Marai Parai and Penibukan, of the Kinabalu Mountain Chain in northern Sabah, Malaysia, at 1,524 m elevation.

Ecology and conservation status.—*Myrsine aralioides* is an exceedingly rare taxon, especially in the Philippines, and as such should be considered endangered. Given its distribution, it may be an ultramafic specialist. Unfortunately, because it is known from mostly historical collections, with few modern data, its ecology is in further need of study.

Etymology.—The specific epithet refers to the ramigerous and ramuligerous umbels, especially conspicuous when in fruit, which are reminiscent of *Schefflera* (Araliaceae) species when viewed from afar.

Common names.—"Lanito" (Bisayan-Davao del Sur).

Specimen examined. **PHILIPPINES. MINDANAO ISLAND. Davao Oriental Prov.:** South Basiao Mati [ca. 06°57'N, 126°13'E], along Biga Creek, 8 May 1929 (fr), *L. Aguilar 53 (PNH 31044)* (NY). **Surigao [del Sur ?] Prov.:** Jun 1919 (fr), *M. Ramos & J. Pasgasio BS 34674* (A). **PALAWAN ISLAND. Palawan Prov.:** Mt. Bloomfield Sabang, Aug–Sep 1986 (fr) *E. Reynoso & J. Proctor et al. 489* (BISH, L, PNH); Mt. Bloomfield, WNW to W face, near chromite mine, [ca. 10°12'N, 118°52'E], 150–200 m, 6 May 1984 (fr), *C. Ridsdale et al. SMHI 1623* (L, PNH). **MALAYSIA. SABAH [BRITISH NORTH BORNEO]: Ranau District:** along E Mesilau River between Mt. Kinabalu golf course site and Mesilau Cave 06°03'N, 116°36'W. 1,700–1,900 m, 20 Dec 1983 (fr), *J. Beaman 7992* (GH, K, L, MSC, UKMS); Pig Hill, 2,134m, 18 Feb 1964 (pist. fl, fr), *W. Chew & E. Corner RSBN 4370* (K, L); Upper Kinabalu, 1,829–4,115 m, 7 Jan 1931 (fr), *J. & M. Clemens 27801* (K, L, NY), 3,350 m, 7 Dec 1933 (stam. fl), *J. & M. Clemens 50807* (NY); Penibukan, 1,219–1,524 m, 16 Jan 1933 (fr), *J & M. Clemens 30989* (A, L, NY); Ranau District, Marai Parai, 1,524 m, 30 Mar 1933 (fr), *J. & M. Clemens 32346* (A, L, NY), 10 Apr 1933 (fr), *J. & M. Clemens 32612* (A, L, NY), 1,524–1,829 m, 17 Sep 1965 (fr), *A. Kanis 53996* (L, SAN); Small valley N of Carson's Camp, 2,700–2,900 m, 15 Jan 1989 (ster.), *M. Hotta 3899* (L).

In the Philippines, *Myrsine aralioides* can be most often confused with

M. glandulosa, but is easily distinguished by its thick, sulcate branchlets, the branchlet and leaf bud vestiture of minute translucent or rubiginous lepidote scales, the marginate and canaliculate petioles, larger thickly coriaceous to cartilaginous leaf blades, and the deltate calyx lobes. There may be an as yet undescribed, more closely related taxon from upper montane forest on the Selangor/Pahang Genting Highlands access road in Malaya, which differs primarliy in having longer petioles, much longer, angulate pedicels, and larger fruits.

14. **Myrsine glandulosa** (Elmer) Pipoly, comb. nov. **(Fig. 3C, D).** *Rapanea glandulosa* Elmer, Leafl. Philipp. Bot. 8:2784. 1915. TYPE: PHILIPPINES. MINDANAO ISLAND. Agusan Prov.: Cabadbaran (Mt. Urdaneta), 1,524 m., Oct 1912 (fr), *A. Elmer 14148* (HOLOTYPE: PNH, destroyed; LECTOTYPE, here designated: A!; ISOLECTOTYPES: BISH!, GH!, L!, K! NY!).

Epiphytic shrub to tree to 3.5 m tall. Branchlets longitudinally ridged to angulate, 3–3.5 mm diam., densely rufous glandular stellate tomentose at first, early glabrescent. *Leaves:* buds densely appressed rufous glandular stellate and dendroid-tomentose, the margins long translucent ciliate, glabrescent; blades coriaceous, obovate, oblong or oblanceolate, (4–)5–7(–9.5) cm long, (1.6–)2–2.8 cm wide, the apex obtuse or rarely, subacuminate and ending in an obtuse tip, the base cuneate, decurrent on the petiole for 3/4 its length, nitid, densely and prominently translucent punctate above and below, midrib raised for its entire length above to petiole base, prominently raised below, the secondary veins 6–9(–15) pairs, somewhat prominulous above and below, the submarginal collecting vein ca. 1 mm from margin, the margin entire, revolute, with numerous prominent pellucid punctations along its length below; petiole marginate, the midrib prominently raised above, 3–5 mm long, glabrous. *Staminate inflorescence:* unknown. *Pistillate inflorescence:* umbellate, 3–12-flowered; peduncle 2–6 mm long, 1–2 mm diam.; pedicels angulate, 3–6 mm long, densely and prominently black punctate-lineate; floral bracts chartaceous, widely oblate, 0.3–0.5 mm long, 0.8–1.1 mm wide, apex broadly rounded, densely and prominently brown punctate, the margin minutely glandular ciliolate. *Pistillate flowers:* unknown. Fruiting calyx 4-merous, chartaceous, unequally divided, 0.6–0.9 mm long, the tube ca. 0.1 mm long, the lobes very widely ovate, 0.5–0.7 mm long, 0.6–8 mm wide, apically obtuse, sparingly but prominently black punctate, the margin irregular, entire except minutely erose apically, glabrous. *Fruit* globose, 3.5–4.5 mm long and in diam., densely and prominently black punctate, the remnant stigma base stylopodic.

Distribution.—Myrsine glandulosa is apparently endemic to the Philippines, thus far known only from southern Mindanao and nearby Negros Oriental, at 1,350–2,242 m elevation.

Ecology and conservation status.—This species is poorly known, and has been found only in submontane forest.

Etymology.—The specific epithet refers to the extremely prominent pellucid punctattions of the adaxial and abaxial surfaces of the leaf blades.

Common name.—"Nagas" (Magobo language, Madulid 1992).

Specimens examined. **PHILIPPINES. NEGROS ISLAND. Negros Occidental Prov.:** SW face of Mt. Canlaon, above Guintubdan Forest Hut, 1,350 m, 29 Mar 1992 (fr), *B. Stone et al. PPI6643* (A, BO, BRIT, K, L, PNH, US). **Negros Oriental Prov.:** Dumaguete, Cuernos Mts., 1,680 m, May 1908 (fr), *A. Elmer 9992* (A, K, NY, PNH, US), (fr), *A. Elmer 10186* (A, K, L, PNH, US). **LEYTE ISLAND. Leyte Prov.:** *sine loc. esp.*, 5 Jun 1914 (fr), *C. A. Wenzel 945* (A), 15 Aug 1914 (fr), *C. A. Wenzel 1063* (A, GH). **MINDANAO ISLAND. Bukidnon Prov.:** Kaatoan, Malaybalay, 11 Oct 1953 (stam. fl), *B.B. Britton 441 {PNH 19666}* (L, PNH); sine loco esp, Jul–Aug 1914 (fr), *L. Escritor BS 21404* (L, NY). **Davao del Sur Prov.:** Davao, Aug 1933, *R. Kanehira 2672* (NY); Mt. McKinley, 2,000 m, 24 Aug 1946 (ster.), *G. Edaño 757 {PNH 1013}* (A, L, PNH) 7,400 ft, 13 Sep 1946 (ster), *G. Edaño 987 {PNH 976}* (A, L, PNH), *1002 {PNH 1052}* (A, K, L), (pist. fl, fr), *999 {PNH 979}* (A); *995 {PNH 994}* (pist. fl, fr) *895 {PNH 987}*, 2466 m, 25 Sep 1946 (fr), *G. Edaño 1059 {PNH 1568}* (A). **South Cotabato Prov.:** Mt. Matutum, Apr 1932 (ster.), *M. Ramos & G. Edaño BS 85015* (A), Mt. Matutum 2,242 m, 15 Apr 1992 (fr), *F. Gaerlan et al. PPI 5361* (A, BO, BRIT, K, L, PNH); Klaja Hill, Barrio Konel, 13 Sep 1950 (pist. bud), *P. Añonuevo 297 {PNH 13598}* (A, L, PNH).

Myrsine glandulosa may easily be confused with *M. aralioides* in the Philippines, but differs by the thinner branchlets, less coriaceous leaves, prominent leaf punctations, red-papillose tomentum of the leaf buds, raised leaf midrib decurrent to the petiole base, longer petioles, thin peduncle and smaller sepals.

ACKNOWLEDGMENTS

I owe my sincerest appreciation to Sy Sohmer and Domingo Madulid, co-PI's of the Philippine Plant Inventory Project at BRIT and PNH respectively, for exposing me to Philippine botany. The company, hospitality and teamwork of the PPI field team members, Ernesto "Mang Estong" Reynoso, Toy Sagcal, Raymond Fuentes, Humberto Garcia, Efren Romero, "Ding" Fernando, Ferdie Gaerlan, Ernesto Barbon, and Raymond Garcia were much appreciated. The special collaboration and collegiality of Victor and Cecilia Amoroso (CMU) was invaluable, as was the hospitality of the Talandig Tribe from Sungco, Bukidnon and Mr. John Tonsciongco of Magdiwang, Sibuyan Island. Important insights into the distribution of ultramafic formations was obtained through the courtesy of the staff of the Geology Division (Luis T. Omaña, Roberto SP de Ocampo, and Priscilla Ong), Philippine National Museum. Technical, administrative and other assistance from June Cunningham, Melanie Medecilo, Maricar Sampson, Irma Castro, Maribel Agoo, "Magen" Genevieve Lusica, James Rivers, and

Myrna Resurección, was very much appreciated. My collections work at PNH and attendance at the *Flora Malesiana* Symposium and visit to K were supported by the John D. and Catherine T. MacArthur Foundation, while fieldwork and work at BRIT is supported by the Philippine Plant Inventory, NSF Grant DEB 9300910. While at K, I enjoyed the cordial hospitality of its director, Prof. Sir Ghillean Prance, as well as the privilege of working and collaborating with Ynette, "Tivvy" Harvey. Also at K, Nicholas Hind, John H. Beaman, Robert Johns, David Frodin, Dick Brummit, "Lulu" Rico, Diane Bridson, Mark Coode, Martin Cheek and Barry Conn, gave freely of advice in geographic specialties, thus making my trip even more productive. During my visit to US, the cordiality and hospitality of Warren Wagner, Vicki Funk, Carol Kelloff, and Rusty Russell was immensely helpful. At A/GH, Michael Donoghue, Emily Wood, Dave Boufford, Anthony Brach, Peter Stevens, Paul Goff, Walter Kittridge, Benito Tan, Peter Ashton, James La Frankie, Santiago Madriñan and Stuart Davies greatly facilitated my work with their collaboration and hospitality. At NY, Scott Mori, Carol Gracie, Pat Holmgren, Brian Boom, Sara Hunkins, Pam White, Lisa Campbell, Amy Litt, Steve Churchill, Favio González and Jackie Kallunki all helped make my visit a success. In the Philippines, the curators and staffs of CAHUP (Norma Aguilar, E. Mandia), CLP (Justo Rojo), LBC (Edwino Fernando), and PUH (Daniel Zagunzal, Leonard Co), received me with warm hospitality and collaboration. I also thank the curators of cited herbaria for providing loans of specimens.

Finally, I am grateful to Gordon McPherson (MO), Kancheepuram Gandhi (GH) and Barney Lipscomb (BRIT), whose thought-provoking reviews of the manuscript and helpful suggestions greatly improved the quality and clarity of the paper.

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NUMERICAL LIST OF TAXA

1. Myrsine medeciloae Pipoly
2. Myrsine apoensis (Elmer) Pipoly
3. Myrsine amorosoana Pipoly
4. Myrsine oblongibacca (Merrill) Pipoly
5. Myrsine cruciata (Philipson) Pipoly
6. Myrsine densiflora Scheffer
7. Myrsine peregrina (Mez) Pipoly
8. Myrsine mindanaensis (Elmer) Pipoly
9. Myrsine philippinensis A. DC.
10. Myrsine avenis (Blume) A. DC.
11. Myrsine penibukana (Philipson) Pipoly

11a. Myrsine multibracteata (Merrill) Pipoly

12. Myrsine fastigiata (Elmer) Pipoly
13. Myrsine aralioides (Philipson) Pipoly
14. Myrsine glandulosa (Elmer) Pipoly

LIST OF EXSICCATAE

The figures in parentheses refer to the numbers from the numerical list of taxa. Collection numbers in **boldface** type indicate type specimens. Collection numbers before [ ] brackets indicate field collection numbers; numbers in brackets indicate herbarium sheet numbers. Both are given because it appears that some duplicates have one number or the other, or both on the mounted specimen. BS indicates herbarium numbers in the Philippine Bureau of Science series, FB indicates the herbarium numbers in the Forestry Bureau Series, and PNH indicates herbarium numbers in the Philippine National Herbarium Series. Other letters indicate herbarium acronyms, except for SMHI, which is a series from the Hilleshog Expedition to Palawan, a joint project of K, L, and PNH, and PPI, a series from the Philippine Plant Inventory, a joint project co-sponsored by BRIT and PNH.

Agaceta, E. 6 [LBC 917] (9)
Aguilar, L. 53 [PNH 31044] (13)
Ahern, G. FB 444 (6)
Añonuevo, P. 297 [PNH 13598] (14)
Argent, G. & E. Reynoso 89112 (3); 89113 (3)
Barbon, E. et al. PPI 2267 (9); PPI 6094 (6); PPI 8223 (3); PPI 8601 (8); PPI 8845 (3)
Beaman, J. 7992 (13)
Britton, B.B. PNH 19666 (14); 421 [PNH 19646] (7); 441 [PNH 19666] (14)
Celestino, M. et al. 0-268 [PNH 4330] (12)
Chew, W. & E. Corner RSNB 4370; RSNB 4372 (5); RSNB 4493 (5)
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